

660
MAY 1951

Route this to:

CHEMICAL PROCESSING

The News Magazine of Processing Developments and Control

Highlights

of this issue's
297 articles

*Describing developments in
processes, techniques, materials,
equipment*

Rendering Noxious Fumes
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The Cover Picture

Winning tantalum from ore calls for processing with HCl and HF — hot solutions of which are being successfully handled by rubber lined tanks, and fumes by rubber lined ducting. For further details see Page 16

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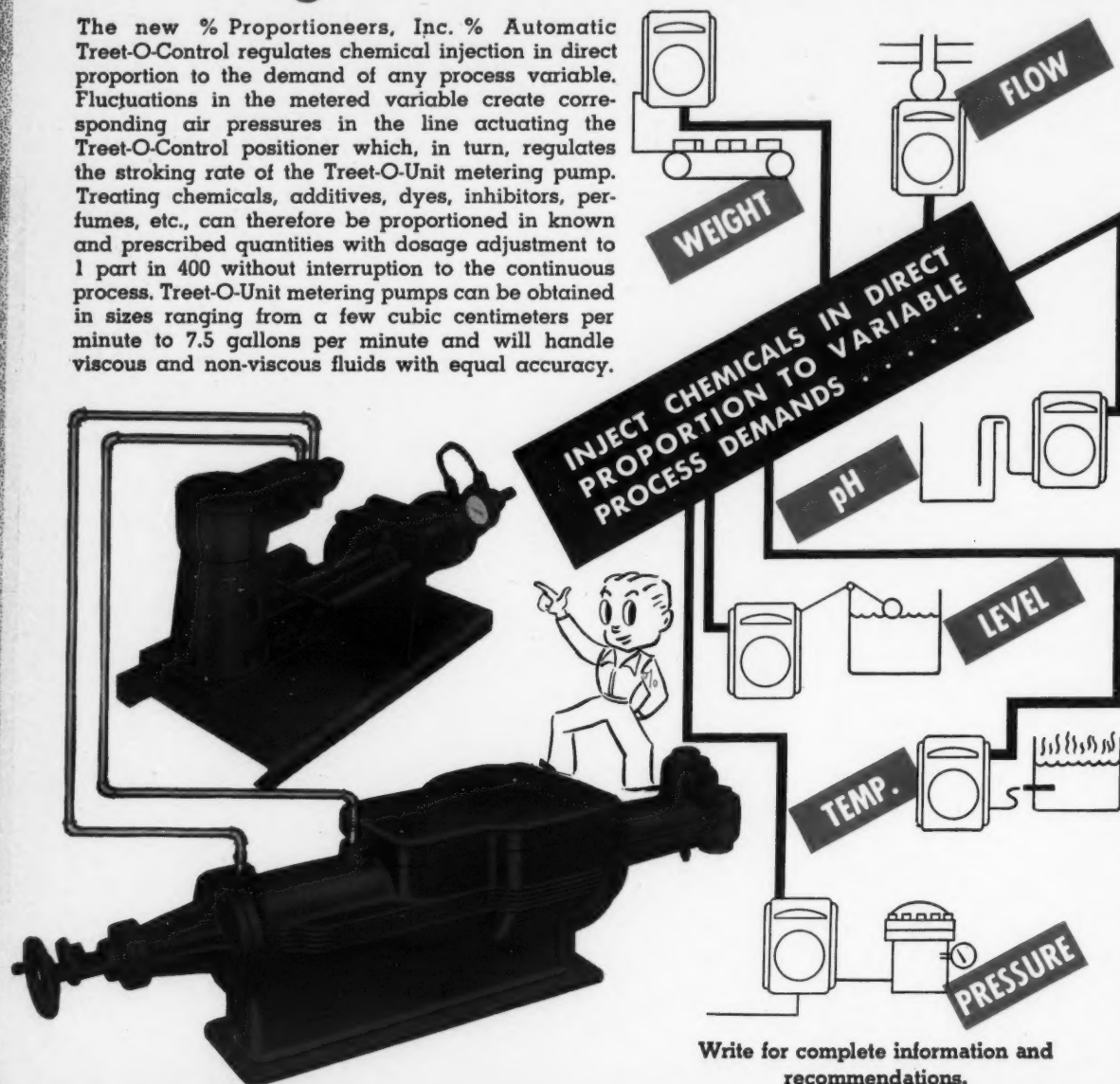
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"That's Interesting"

Ion exchange in 16th century

One of the first to call attention to the purification of water by the process known as ion exchange was Francis Bacon. He pointed out that if one digs a hole on the sea shore at a point somewhat higher than the high water mark and as deep as the low water mark, this hole will be filled with fresh and potable water, when the tide comes in.

Lord Bacon did not claim to have discovered this fact. He knew that the purification power of soil did not last indefinitely. He explained that passage of salt water through ten vessels containing soil would not remove saltiness but that twenty passes did result in freshness. (Corrosion Reporter — International Nickel Co., Inc., New York 5, N. Y.)

"Super Sniffer" prospecting . .

A Geiger counter for prospecting has a flashing neon blinker light to indicate counts. The instrument is also sensitive to both beta and gamma radiation and has a beta window to permit more careful checking of ores. Flashlight battery type loading simplifies this operation. A radioactive source is supplied for checking purposes. The "Super Sniffer" is available from Nuclear Instrument & Chemical Corp., Chicago, Ill.

Sunflowers must stand up for machine harvesting

A sunflower harvesting machine is performing well under tests at Decatur, Ill. It was designed at the University of Illinois. It is a one-row affair but could be built as a two-row harvester. One obstacle to be overcome is development of sunflower standability.

280 million gal of benzene goal for 1953

Leading benzene producers and users have asked Government help to effect production of 88 million gallons of synthetic benzene a year from petroleum. Present production from petroleum is 12 million gallons, while 165 million gallons are derived from coal. The industry suggested a goal of 280 millions from petroleum and coal for 1953. (Coatings — Natl. Paint, Varnish & Lacquer Assn.)

Glycerine substitutes opposed by drug manufacturers

At a combined meeting of the American Drug Manufacturers Association and the American Pharmaceutical Manufacturers Association, representatives of the two groups said that even if glycerine shortages grew more acute, a substitute product should not be used in drug products "unless absolutely necessary." (Glycerine Facts, New York 17, N. Y.)

For more information on product at left, specify CP 4328 . . . see information request blank between pages 2-3.

"That's Interesting"

Transforms exhaust fumes into harmless vapors

Carbon monoxide is "depoisoned" by a method recently developed by a famous petroleum scientist. It consists of a chemical catalyst which transforms exhaust fumes into harmless vapors. This invention is already in successful use on engines using unleaded gasoline, such as those in fork lift trucks. (As reported in Witcombings — Witco Chemical Co., 295 Madison Ave., New York 25, N. Y.)

Monel V-belt fastenings resist tannery atmosphere

A New York state tannery switched from operating tanning drums in gangs, from a central power shaft, to individually driven drums, with good results. Drum load was increased 100% because of extra power available and maintenance costs dropped. Still further savings were made when steel V-belt fasteners were replaced with Monel. Steel fasteners required replacement every 4-6 months. Down time meant production cost of 20 skins. Monel fasteners are still giving service a year after installation. (Process Industries Quarterly — Vol. 13, No. 2 — International Nickel Co., New York 5, N. Y.)

Special suits protect workers handling rocket propellants

Handling liquid rocket propellants is often a risky assignment. Take, for example, a propellant composed of red fuming nitric acid and aniline. Often colorless and odorless, the latter is toxic and readily absorbed by the skin. To provide protection, Clothing Branch of the Air Material Command's Aero Medical Laboratory developed special garments. These afford overall body protection, incorporate a method of interior cooling, and assure worker comfort and elbow room.

One cooling method utilizes an air-ventilated harness attached to a nylon suit worn under the coveralls. Air is dispensed through plastic tubes and is supplied from an expansion turbine similar to type used for cooling cockpits of fighter planes. Circulating air in hood eliminates need for respirator. Other method uses water evaporation. An outer shell of mercerized cotton fits over coveralls. When soaked with water, shell reduces overheating. Air breathing apparatus of demand type provides respiratory system. Engineers are said to favor the evaporation method outfit as more economical and comfortable. (The Martin Star—The Glenn L. Martin Co., Baltimore, Md.)

Diethyl acetylsuccinate

Diethyl acetylsuccinate is a colorless, water-insoluble oil, miscible with most organic solvents, that holds interest for many chemists in the research field. Possible compounds are pyrazolones, useful as intermediates in azo dyes, and certain coumarins which are fluorescent in alkaline solution.

L. F. Loutrel Jr., development director for Monsanto's Merrimac Division, describes the product as a beta-keto ester, highly reactive chemical useful in the synthesis of a wide range of organic compounds, including many organic acids and ketones. It is available in experimental quantities.

Now you can tell a man's job by color of his safety hat

Ultra modern stylists have long urged men to wear suits and hats of vivid colors. Male conservatism has balked a bit at this. However, reaction to safety headgear of brilliant hue is reported to be rather enthusiastic. Molded Fiberglas "Hard-Boiled" hats are offered in wide choice of colors. Colors are molded all the way through the stronger-than-steel Fiberglas crowns and can be selected to match company color schemes or to designate worker's particular job. Fiberglas hats are definitely specified for use where there are hazards of electric shock. (As reported in "What's New in Safety"—E. D. Bullard Co., 275 8th St., San Francisco 3, Calif.)

(Continued on third cover)

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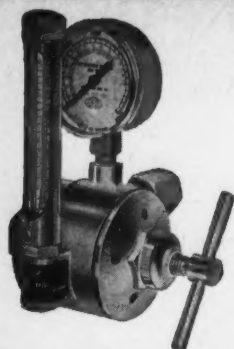
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When inquiring check CP 4329 on handy form, pgs. 2-3



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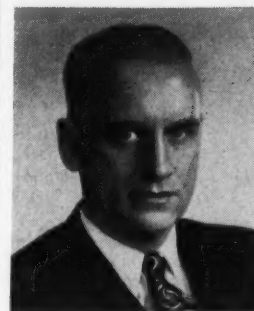


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Commercial Chemical Development

By
FREDERIC A. SODERBERG
Manager Industrial Division,
Technical Department,
General Dyestuff Corporation



B.S. in Ch.E., 1925, and professional degree of Chemical Engineer, 1933, from University of Maine.

President, Commercial Chemical Development Association. Vice Chairman of Chemical Marketing Sub-division, American Chemical Society. Vice Chairman, University of Maine Pulp & Paper Foundation.

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FOR YEARS, research, manufacturing and sales groups in chemical companies have been accusing one another of real or imagined shortcomings. The research director believed implicitly that the plant should make pilot plant studies of every sample, while sales was dedicated to the task of turning customers' plants into field laboratories. He would point to the rows of promising untested products on his laboratory shelves as positive proof that the other two divisions were not willing to cooperate.

The manager of manufacturing felt that research was intent upon disrupting the flow of profitable production, and that sales was guilty of demanding goods in volume which they could not sell. Statistics showing costly breaks in production schedules and large inventories of slow moving goods served to substantiate these claims.

The sales manager credited research with foisting "half baked" chemicals on his customers, while manufacturing was so inflexible that it could not or would not follow market trends. Numerous failures of research products and inability to meet consumer demands, either in quality or volume, were the sound arguments advanced by sales.

As the number of new, potentially saleable products developed by research increased, it was only natural that the relations among the three groups rapidly deteriorated. At this point the science of commercial chemical development came to the fore as the logical means of coordinating the functions of research, plant and sales. By placing commercial development on an organization level with the other three, management has been able to successfully direct the flow of worthwhile chemicals from test tube to continued consumer acceptance. The commercial development division, familiar with all the intermediary steps and answerable only to top management, provides the necessary "lubrication" to keep profits flowing into the till.

Those in charge of commercial development are responsible for use or application research, pilot plant operation, technical service, market development, field service, market research, sales development, etc. To illustrate briefly some of these functions, we might consider the scientific marketing of "Chemical QED."

Basic research, for example, turns over to application research a new chemical with certain fundamental characteristics. It is tested and found to impart worthwhile properties to a manufactured item. Product development steps in at this point and endeavors to ascertain the feasibility of manufacture, costs and multiple applications. Then, market

(Continued on page 162)

CHEMICAL PROCESSING

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CHEMICAL PROCESSING

(CHEMICAL PROCESSING PREVIEW)

The News Magazine of Processing
Developments and Control

VOL. 14

NO. 5

MAY, 1951

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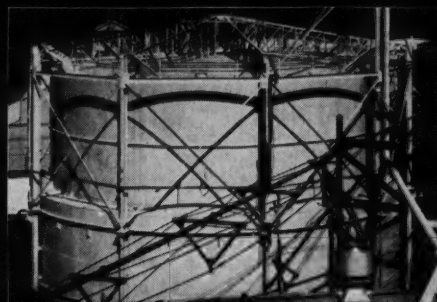
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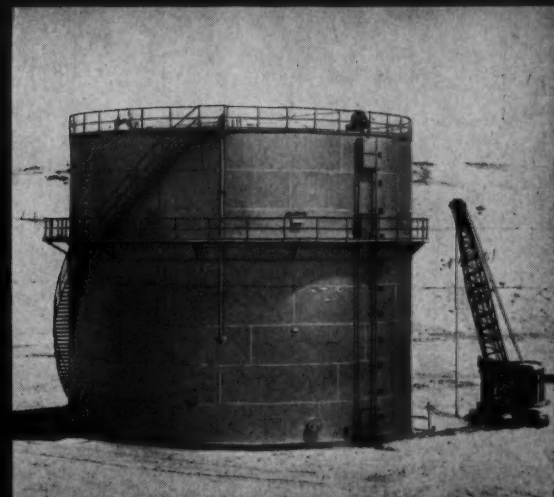
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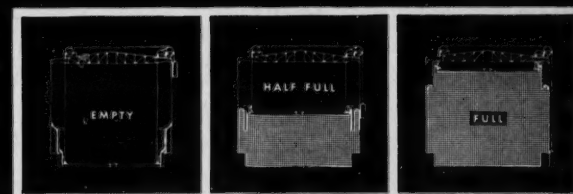
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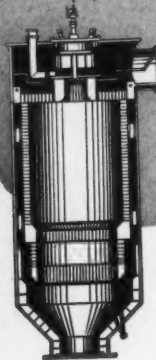
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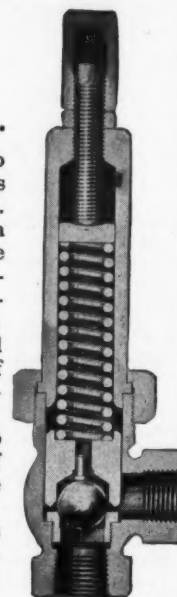
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Fig. 141 Series ...

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Fig. 128
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Edward GLOBE AND ANGLE VALVES



Fig. 444-48 Series... Edward forged steel globe and angle valves are available in stop, needle or stop-check types. Union or bolted bonnet construction, screwed or socket welding ends and 13% chromium stainless steel seat and disk. Their design, with stem at 60° to line of flow, allows approximate straight-through flow and consequent savings because of low pressure drop and minimum turbulence. Built in 600 and 1500 lb sp series at 850F and in sizes ¼ in. to 2 in. inclusive.

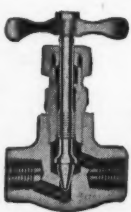
Edward CHECK VALVES

Fig. 2672-78 Series... Edward forged steel check valves are built in both ball and piston disk types in 600 or 1500 lb sp series at 850 F for either horizontal or vertical lines. Union or bolted bonnet construction, screwed, socket welding or flanged ends and 13% chromium stainless steel seats and disks. Built in sizes ¼ in. to 2 in. inclusive.



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Fig. 952-3 Series... Ratings of 6000 lb WOG or 1500 lb sp at 1000 F—carbon steel or 13% chromium stainless steel bodies in sizes ¼ in. through 1 in.—drop forged body & bonnet—screwed or socket welding ends—swing bolted gland and tapered needle point 13% chromium stainless steel stem-disk—no bonnet joint—globe and angle designs.



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Fig. 152-3 Series... Ratings of 6000 lb WOG at 150 F or 600 lb sp at 750 F—carbon steel, 13% chromium stainless steel or 18-8 stainless steel bodies—13% chromium stainless steel semi-needle stem-disk—sizes ¼, ½, ¾ in. have safety taper threaded bonnet joint—¾ and 1 in. sizes have union bonnet—globe and angle designs.

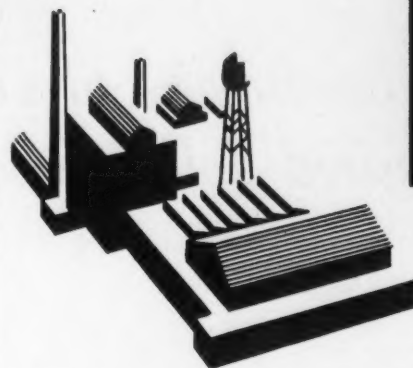
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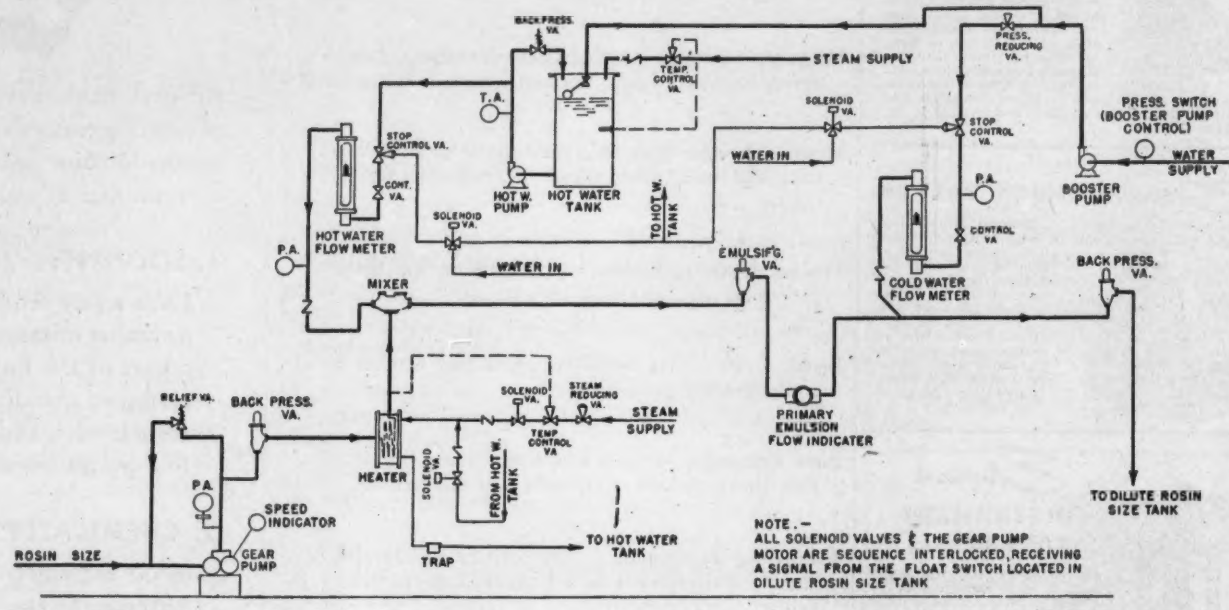
Compact machine holds size-solids content accurate to $\pm 0.1\%$, permits use of 5 less tanks than batch system

PROBLEM: Because the Oswego Falls Corp. in Fulton, N. Y., are always alert to improved methods which may be used in the manufacture of milk bottle stock, ice-cream pail and other sanitary boards, they sought an automatic rosin size emulsifier to give an improved emulsion, save labor and recapture floor space occupied by emulsion storage tanks. They knew an improperly made emulsion can create wet press sticking, felt filling and non-uniform paper sizing. When these occur, not only is production slowed, but costs mount due to sub-standard sheets.

Oswego Falls used the standard practice of emulsifying the size in a batch type process, in which thick size (70 to 80% solids), was blown through a steam injector to form a dilute emulsion containing 2 to 5% solids, depending upon requirements. The process was largely under manual control. Thus, the element of human error was always present to prevent close control of size concentration within desired limits. Eight to ten man-hours per 24-hr day were required to make up the emulsion with this batch system.

Solution: An automatic emulsifier has been put to work in this mill. A flow diagram of the unit accompanies this article. It can be seen that thick size is heated, mixed with a proportioned flow of hot water and passed through emulsifying valve, after which cold water is proportioned to the emulsion to obtain the desired concentration. All components shown in diagram are contained in a cabinet 56" wide, 48" deep and 74" high. Control valves and indication devices are mounted on the front of cabinet.

Should some integral part of the system malfunction, safety interlocks will prevent machine from starting or, if running, will shut it down. Emulsifier is electrically interlocked so that it is automatically stopped and started by means of float switch in dilute storage tank. When desired, it can be started and stopped manually. The system can emulsify the complete range of free rosin contents



from very low or neutral types to as high as 45%. Table represents maximum capacities at various concentrations of emulsion. In brief, the emulsifier will easily handle twelve (12) tank cars of 70 or 80% size (96,000 gallons) per month.

Results: The fine particle size emulsion delivered by the machine is accurate to plus or minus 0.1% in solids content. Once set, everything runs automatically, and all that is needed are periodic checks to be sure that nothing

is amiss. The assurance that concentration of emulsion is uniform means that less size is used. The batch process required six 5000 gal tanks; automatic process requires only one. Thus, especially since the machine is so compact and small, much valuable floor space is saved.

Source: Automatic emulsifier was designed by American Cyanamid Company, Dept. CP, 30 Rockefeller Plaza, New York 20, N. Y. . . . or for more information check CP 4336 on handy form, pages 2 and 3.

Maximum Capacities of Automatic Emulsifier

| Emulsion Concentration | Emulsion, gpm | 70% Rosin Size, gpm | Rosin Solids, lb/min |
|------------------------|---------------|---------------------|----------------------|
| 1.5% | 89 | 1.77 | 11.15 |
| 2.0% | 89 | 2.36 | 14.86 |
| 2.55% | 89 | 3.0 | 18.90 |
| 3.0% | 75.5 | 3.0 | 18.90 |
| 4.0% | 57 | 3.0 | 18.90 |
| 5.0% | 45.5 | 3.0 | 18.90 |

Rendering Noxious Fumes Odorless Now Economical Due to Low Temps of Catalytic Combustion

Hydrocarbon fumes that are normally oxidized at 1400°F have a minimum catalytic combustion temp of 450°F

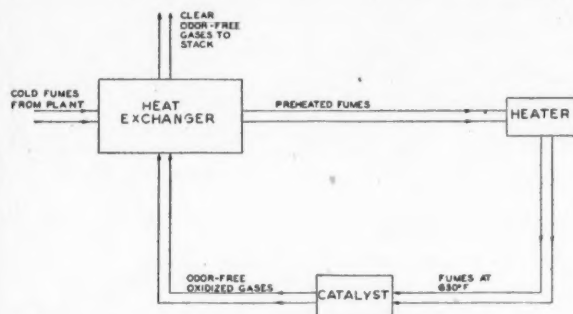
WASTE gases in phthalic anhydride production at Reichhold Chemicals in suburban Detroit could not be expelled to the atmosphere because of their noxious nature. Among other constituents, these gases contain maleic anhydride, naphthalene, naphtha-quinones, as well as small amounts of phthalic anhydride in finely divided crys-

talline form sufficiently fine to be carried by air stream. No matter from which direction the wind might blow, there are always residential areas on the plant's windward side.

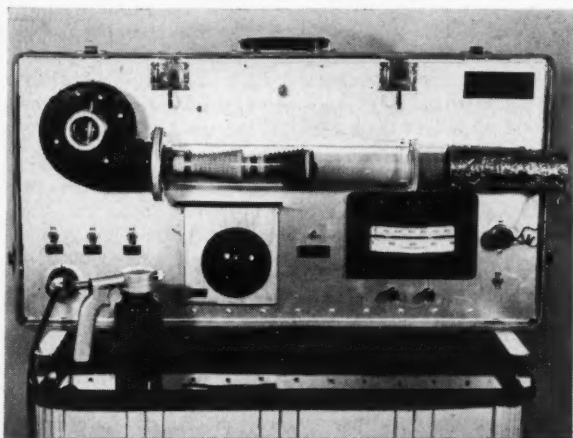
Reichhold carried on extensive research and set up trial units to combat air pollution. Condensation boxes, water scrubbing, and steam injection into the effluent stream were tried. Although these imposed mechanical and water disposal difficulties, they were effective in eliminating solid particles. Chief offenders, however, — lachrymators and "stinkers" — were still allowed to pass through.

Research was made on the possibility of introducing additive chemicals to the effluent stream to render the contaminants odor-free. It was also recognized that the noxious gases being hydrocarbon in nature could be completely oxidized to water vapor and carbon dioxide by direct flame heating, or incinerating. Cost prohibited this since it would require approximately 1,400,000 Btu/hr to heat 1000 cu ft/min of effluent from a discharge temperature of 70° F to a required oxidizing temperature of about 1400° F.

Hearing about catalytic combustion being successfully used in wire enameling plants for disposal of cresols, naphthas, and xylols, Reichhold investigated the applicability of this process to their fume disposal problem. Essentially, the process employs a catalyst that serves to tremendously



Flow diagram for treatment of noxious fumes by Catalytic Combustion



Test unit that is being used to demonstrate the effectiveness of Catalytic Combustion

lower the oxidation temperature of combustible fumes — from an un-catalyzed combustion temperature of approximately 1400° F for phthalic anhydride to a minimum catalytic combustion temperature of about 450° F. Operating temperatures of the order of 650° F are required, however, for oxidation to an odor-free effluent. This is caused by the strong bonds occurring in some of the complex hydrocarbons mixed with the effluent stream. Under these conditions combustion is complete — whether

(Continued on page 23)



YOU GET
More Capacity...
use Less HP with
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Homogenizers

Gaulin Homogenizers can help you reduce today's high production costs involving dispersions and emulsions by giving you *more capacity*. In addition, they will further reduce operating costs because Gaulin Homogenizers require less HP to give you maximum output.

Precision built of high quality materials, these rugged, dependable homogenizers keep working day in, day out with practically no maintenance costs — thus providing still more savings.

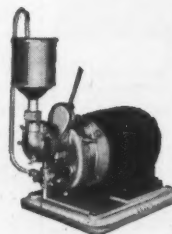
They are available in capacities from 75 to 4000 gallons per hour and with operating pressures up to 15,000 lbs. per sq. in.

It will pay you to investigate Gaulin Homogenizers, High Pressure Pumps, and Colloid Mills. Write for information.



Gaulin Laboratory Homogenizer — Ideal for experimental purposes, pilot plant operation or processes requiring 25 gallons per hour capacity. Available on low rental basis.

Gaulin Two-Stage Colloid Mill — Two-stage valve assembly. Stator is jacketed for cooling or heating. Gap setting, adjustable for .001" to .045".



Manton Gaulin
Manufacturing Company, Inc.
55 GARDEN STREET, EVERETT 49, MASS.



When inquiring check CP 4337 on handy form, pgs. 2-3

THE ONE-BLOCK **BH** INSULATION

MONO-BLOCK

1700° F

MADE WITH **BLACK** ROCK WOOL

FLEXIBLE AND EASY TO CUT
FITS TIGHTLY OVER IRREGULAR SURFACES

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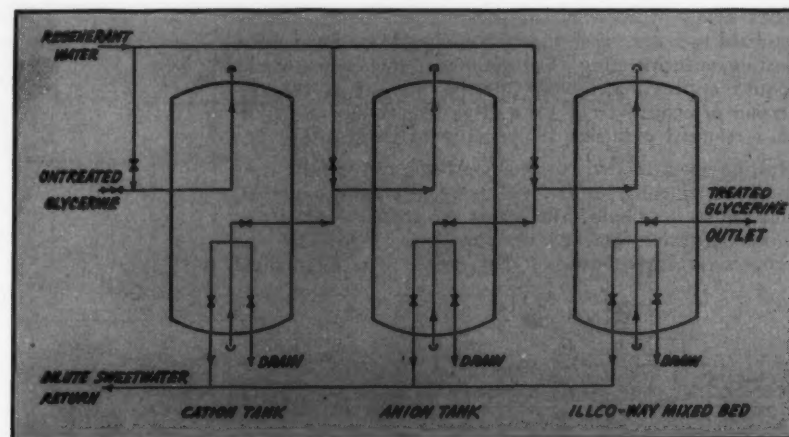
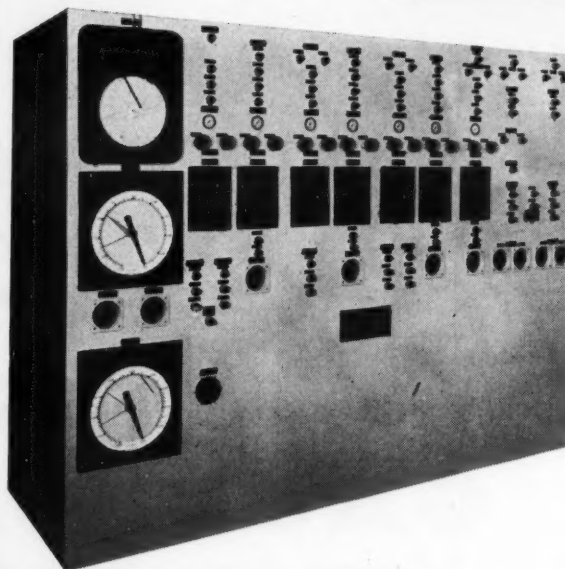
When inquiring check CP 4338 on handy form, pgs. 2-3

New Solutions
OF PROCESSING PROBLEMS

Ion Exchange Eliminates Distillation in Purifying Crude Glycerine

Product has improved
color stability, less
fatty acids and esters;
cost of process is often
smaller

Operating panelboard which automati-
cally controls the operation of a 200
gal/min Illco-Way ion exchange system
that treats glycerine sweetwater



Flow diagram for glycerine treatment by ion exchange

Results: Purified glycerine is at least equal, and in some cases superior, to the distilled product. Color stability of deionized product is better than that of the distilled. In all cases, fatty acid and ester content is lower. Consequently, when the deionized glycerine is esterified with an organic acid, such as phthalic anhydride, the final product is lighter in color.

The cost of an ion exchange process for glycerine purification is, like any ion exchange application, proportional to impurity content of the material being treated. In general, it is less expensive than distillation for crudes with less than 10% of ionized solids, and for sweetwaters with less than 2% ionized materials.

Source: Illinois Water Treatment Co., Dept. CP, 899 Cedar St., Rockford, Ill. . . or for more information check CP 4339 on handy form, pages 2 and 3.

Tells how to lengthen life of condenser tubes

Thirty-page illustrated brochure reports on causes of corrosion in condenser tubes, means of lengthening service life, and proper choice of tube materials. Present restrictions on use of copper and its alloys make this brochure of special importance. Factors affecting tube life which are studied include dezincification, general thinning, pitting, intergranular corrosion, stress corrosion, corrosion fatigue, erosion, impingement attack, and bacterial corrosion.

Added feature is useful table giving estimating data for condenser and heat exchanger tubes in various alloys. "Life Extension for Condenser Tubes" is issued by Revere Copper and Brass Incorporated, Dept. CP, 230 Park Ave., New York 17, N. Y. When inquiring specify CP 4340 on handy form, pages 2 and 3.

CHEMICAL PROCESSING

PROBLEM: The cost of producing CP glycerine by distillation of crude glycerine made by soap and fatty acid industries is high, and yields of the pure product are relatively low.

Solution: Crude glycerine solution (glycerine sweetwaters from any source) may be passed through a series of ion exchange resins. During passage, the color, odor and ash are almost completely removed from the solution. After deionizing, the solution is evaporated to yield CP glycerine. No distillation is necessary.

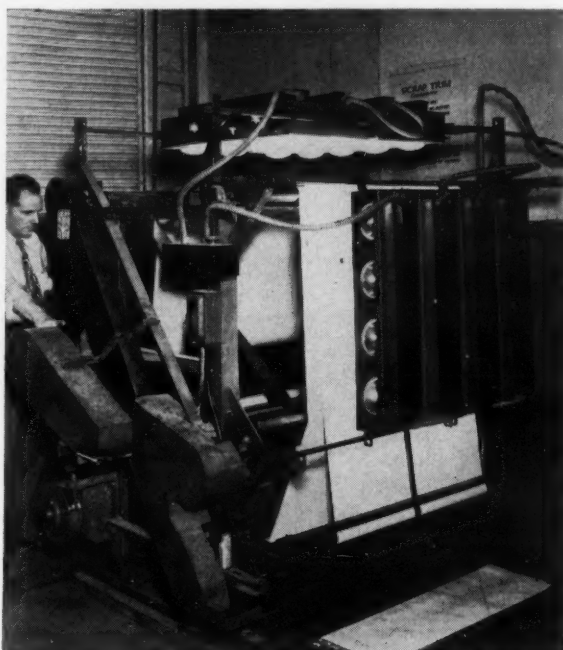
Ion exchange has been successful in purifying a wide variety of glycerine-bearing solutions, ranging from 3-5% glycerine through normal sweetwaters with 8-15%, to saponification crudes and soap lye crudes in which ash content is as high as 15%.

Rubber cement is dried on top stock in 18 seconds by infrared . . .

one man can do in four hours what it took three men two shifts to do before

Problem: Six men (three on each of two shifts) were needed to coat top stock (principally for volley balls) with rubber cement and dry it at W. J. Voit Co., Los Angeles. These men were kept busy preparing all the stock needed for a day's production. Stock had to be cut into squares, hand coated with cement by brush, and air dried for 10 to 15 minutes on a slow-moving conveyor.

Solution: A different, accelerated method of drying, infrared heat, is now being employed at this plant. Stock does not have to be cut before drying, and the



Rubber cement is applied to top stock and dried in 18 seconds by infrared lamps

rubber cement is applied automatically and continuously. As can be seen in the photograph, the stock passes over a number of steel rollers, against a reinforcing canvas belt. The cement is applied to one side of the stock as it passes over a coating roller at the bottom of the machine. After that, it passes in front of infrared lamps for drying, and it is then removed.

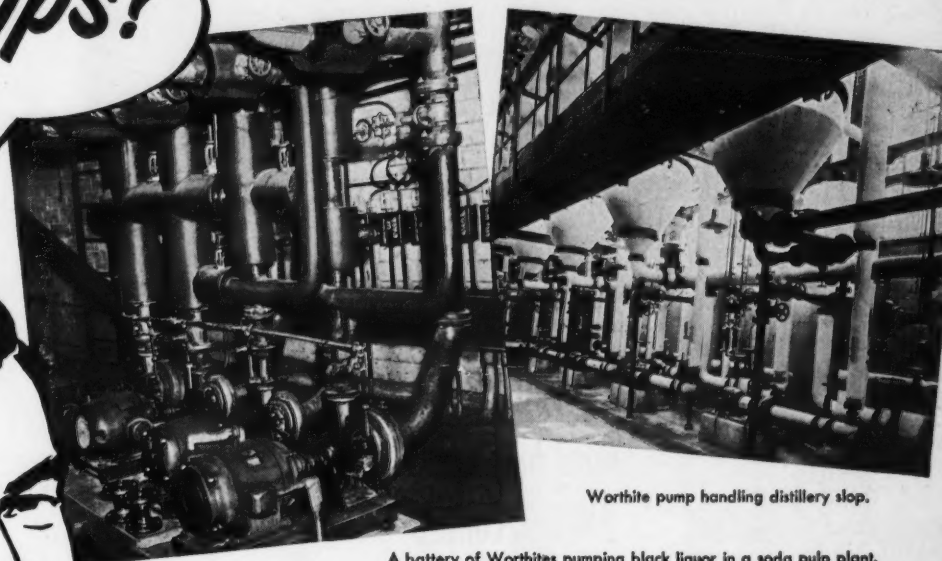
Two separate rolls of top stock, each about 18" wide, are handled at one time on the machine. The material moves at a speed of 15 fpm. The lamps used are all rated at 250 watts.

Results: Drying time is 18 seconds as contrasted to 10 to 15 minutes by the original method of drying. The machine produces in four hours all the stock that is required for a day's production, with one attendant.

In addition to this application, Voit uses infrared to dry rubber cement in 30 seconds on the two halves of rubber sections of tennis balls before cementing together. Infrared is also used on the outside of rubber tennis balls before applying the felt covers, and for drying cement on rubber valves used in various types of sporting goods.

Source: The Fostoria Pressed Steel Corp., Dept. CP, Fostoria, Ohio . . . or for more information check CP 4341 on handy form, pages 2 and 3.

Looking for evaporator pumps?



Worthite pump handling distillery slop.

A battery of Worthites pumping black liquor in a soda pulp plant.

You can get the best in Worthington Worthite Centrifugal Pumps



By standardizing on a complete range of sizes in one superior stainless steel, Worthington can concentrate its volume and inventories. This means you can get the centrifugal pump and parts you need for handling corrosive liquids and other chemicals. Thousands of these Worthington standard pumps are now in evaporator service, pumping such widely varying liquids as black liquor, ammonium sulfate and frozen orange concentrate. Their advanced design and exceptional resistance to abrasion and corrosion assure best results at lowest operating cost.

FOR ALL EVAPORATOR SERVICES

Worthington has evolved a scientific

method of selecting exactly the right pump for size, speed, head, capacity and NPSH. Let us show you how it works. For further facts proving *there's more worth in Worthington*, call your nearest District Office. Or write to *Worthington Pump and Machinery Corporation, Centrifugal Pump Division, Harrison, N. J.*

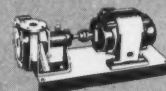
TYPICAL LEADING MANUFACTURERS OF EVAPORATOR SYSTEMS USING WORTHITE PUMPS

Buflovak • General American Transportation
Goslin Birmingham • Koppers
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Swenson • Wilputte • Zaremba

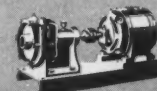
WORTHINGTON



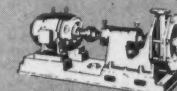
**THE WORLD'S
BROADEST LINE
ASSURES YOU THE
RIGHT PUMP FOR
EVERY JOB**



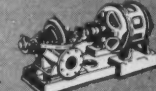
Types CG and CGL. Sizes 3/4" to 10". Capacities to 3000 GPM; heads to 200 ft. Liquid ends of WORTHITE alloy.



Type CF. Sizes 1" to 4". Capacities to 1000 GPM; heads to 130 ft. Standard, all iron and all bronze.



Type CQ. Sizes 1 1/2" to 3". Capacities to 600 GPM; heads to 130 ft. at 1750 RPM. Closed impeller. WORTHITE shaft and fittings.



Type L. Sizes 3" to 8". Capacities to 2250 GPM; heads to 300 ft. Single stage valve. For general service.

When inquiring check CP 4342 on handy form, pgs. 2-3

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TO INDUSTRY

SHARPLES SYNTHETIC ORGANIC CHEMICALS

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| AMINES | MERCAPTANS |
| PENTASOL | DITHIOCARBAMIC |
| (Mixed Amyl Alcohols) | ACID DERIVATIVES |
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| (Amyl Acetate) | ORTHOPHEN |
| ALKYL CHLORIDES | (Alkylphenol) |
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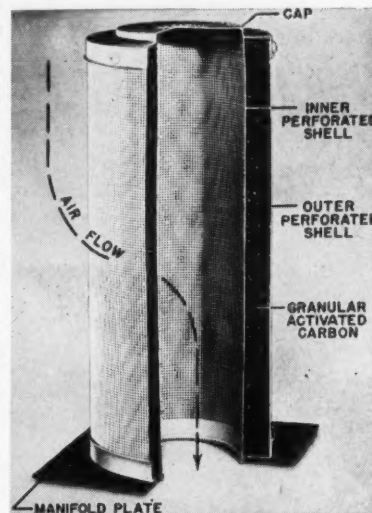
NEW SOLUTIONS of processing problems

Caustic scrubbing didn't remove bad smell from air; activated carbon turns trick . . .

system handles 12,000 cfm through ducting; discharge air is entirely free of objectionable odor

Problem: The tenacious, garlic-sulfide stench given off during production and handling of sodium dithioformate at the Nutley, N. J., plant of Hoffmann-La Roche could not be controlled by usual methods such as scrubbing with caustic soda. The vapors adhered to skin and clothing of anyone passing through the operational area, making him conscious of the odor for hours afterward. Then too, vapors were a possible source of complaint from nearby residential neighbors.

Solution: Experiments revealed that the only satisfactory method of removing the odors was use of activated carbon filters. As a result, such a system was installed.

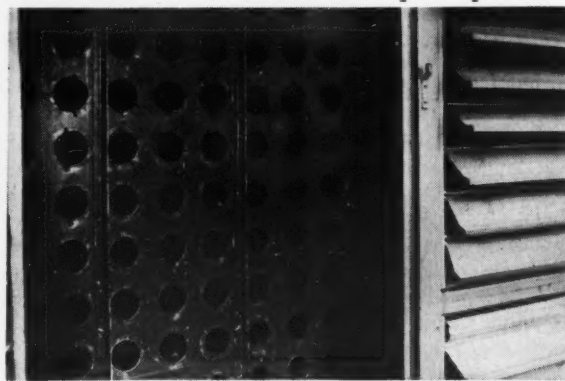


Cutaway view of canister, showing air flow

A low speed exhaust fan draws 12,000 cfm of air at $\frac{3}{8}$ " SP through

a manifold duct system connected to vents of about 15 pieces of equipment, all handling the malodorous material. Additional inlets of the ductwork draw air from the general area of building housing the process.

All this air is discharged through air conditioning type dust filters (total cross section about 33 sq ft) followed by distribution plate bearing 503 Dorex Type 42 carbon canisters. Resistance of each canister is 0.14" water with air flow of 24 cfm. Total weight of fresh carbon used is about 800 lb. In 6 months it picks up between



Manifold plate of activated carbon adsorption system

300 and 400 lb of air-borne material, including moisture and traces of organic solvents. It is ready for regeneration by then.

Spent carbon, laden with fumes, is shipped in sealed containers to the activated carbon supplier. The supplier reactivates returned material, reclaiming about $\frac{3}{4}$ of the

When inquiring check CP 4343 on handy form, pgs. 2-3

CHEMICAL PROCESSING

NEW SOLUTIONS of processing problems

original charge. The other $\frac{1}{4}$ consists of fresh carbon. Cost of reactivation, including shipping charges and labor, is about \$600 (every 6 months). A complete set of spare canisters is kept on hand. Process is shut down for about 6 hr when replacing canisters.

Results: Air stream leaving adsorption system is entirely free of objectionable odor. Thus, persons in the operational area and surrounding locality do not suffer from the bad smell.

Source: Adsorption system designed by W. B. Connor Engineering Corp., Dept. CP, Shelter Rock Lane, Danbury, Conn. . . or for more information check CP 4344 on handy form, pages 2 and 3.

Putman Publishing moves to its new building



SHOWN here is a sketch of the new Putman Publishing Company building.

Having outgrown our old facilities, and moved to the new building, we hope to serve our readers better than ever before.

When you are looking for more information about subjects discussed in this issue... or if you need an answer to a processing problem... direct your request to us at **CHEMICAL PROCESSING**, 111 East Delaware Place, Chicago 11, Illinois.

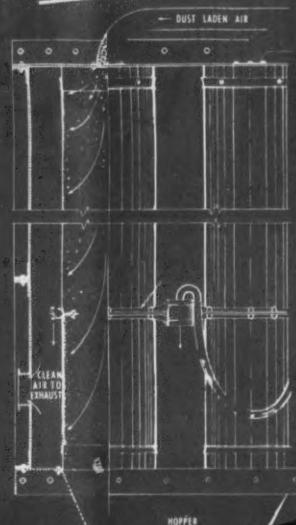
Tells how to measure, sample petroleum and its products

Manual explains recommended methods for measuring and for obtaining representative samples of petroleum and petroleum products. Included are methods of gaging, temperature measurement, and sampling; a recommended practice for volume calculations and corrections; and tests for water and sediment by centrifuge, for gravity by hydrometer. There is also a proposed method of sampling liquefied petroleum gases.

Contents include many photographs and figures that show latest types of apparatus for gaging, temperature measurement, and sampling. Test methods are written concisely. To obtain the 132-page "Measurement and Sampling of Petroleum and Petroleum Products" remit \$2 (paper covered) or \$2.65 (cloth covered) direct to American Society for Testing Materials, Dept. CP, 1916 Race St., Philadelphia 3, Pa. When inquiring specify CP 4345 on handy form, pages 2 and 3.

MAY, 1951

IF IT'S GOOD ENOUGH FOR ULTRA-FINE RADIOACTIVE DUSTS IT'S IDEAL FOR YOUR MOST HAZARDOUS JOBS



Sectional view of MIKRO-COLLECTOR showing felt filter bags and reverse jet cleaning ring.

10 Reasons

why a MIKRO-COLLECTOR will best help you win a war with Dust

1. Phenomenal Filter Rates
2. Highest possible recovery of solids
3. Requires less filter surface, floor area
4. Extreme simplicity, low upkeep, minimum attention
5. Selected wool felt filtering medium
6. Reduced number of filter bags; quick changeover
7. Continuous, fully automatic operation
8. Uniform air flow
9. Easy handling of dust loads, damp or dry
10. Thorough survey and diagnosis of dust problem

Photo-micrographs illustrate value of wool felt as a superior filter medium.

The MIKRO-COLLECTOR* has virtually no rival in the collection of radioactive dusts of ultra-fine particle size. For among many other triumphs, it has scored a spectacular record in the handling of such dusts. Its installations for this purpose alone, during the past year, have a combined capacity of more than 100,000 cfm.

We can show you data which should leave no doubt in your mind that a MIKRO-COLLECTOR can handle your job economically and efficiently, if it falls in either of these classifications:

- 1—Elimination of atmospheric pollution—regardless of the dangerous or noxious quality of the dust, or the minute size of the dust particles.
- 2—Full recovery of a valuable product.

This is made possible by the MIKRO-COLLECTOR's pressed felt filter medium and its Hersey reverse-jet cleaning ring, which assure phenomenal filter rates and the very highest dust recovery.

SEND FOR—actual sample of the felt used in a MIKRO-COLLECTOR. See for yourself how it helps you "turn dust into dollars."

PULVERIZING MACHINERY COMPANY
60 Chatham Road Summit, New Jersey

MIKRO-COLLECTOR
100 PER CENT

Reg. U. S. Pat. Off.

By the makers of

MIKRO-PULVERIZERS and MIKRO-ATOMIZERS



PRESSED FELT

Photomicrograph (25 diam. enlargement) of special, pressed wool felt... Drawing shows how dust particles are trapped by density of felt while air flows through in constant volume.



WOVEN CLOTH

Photomicrograph (25 diam. enlargement) of ordinary filter cloth... Drawing shows how dust can escape through open mesh.

*Patents applied for by H. J. Hersey, Jr. and Pulverizing Machinery Company

PRESERVE OUR HERITAGE: FAITH, FREEDOM AND INCENTIVE

When inquiring check CP 4346 on handy form, pgs. 2-3

STOP ACCIDENTS with BRADY SAFETY SIGNS

Here's an AMAZING BRAND NEW SAFETY SIGN that will be welcomed by Safety Men! Brady Safety Signs stick to wood, glass, metal, concrete, etc. without moistening. May be applied to any clean surface in a jiffy. No screws, nails, bolts or skilled help necessary. All you do is peel from card, apply where wanted and the sign is up to stay.

Brady Safety Signs are made of durable cotton cloth, Silicone Coated to resist dirt, grime and moisture. CONFORM TO ASA Standard Z35.1-41. Select your requirements from a complete catalog of standard safety messages. Cost only a few cents per sign. Immediate delivery. Specials made to order.

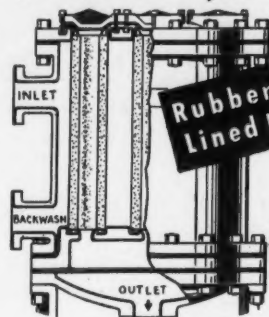
WRITE FOR
Free
SAMPLES
AND
USEFUL
CATALOG



When inquiring check CP 4347 on handy form, pgs. 2-3

Get Crystal Clear FILTERING of Corrosive Acids

Cut Filtering Costs with



ADAMS
PORO-STONE
FILTERS

1 Easy cleaning, without dismantling, by simple backwashing.

2 Safe — eliminates toxic fumes and workers' contact with dangerous acids.

3 Filter shells — rubber or lead lined. Filter tubes inert to acids or alkalis.

Write for Bulletin 9348

R. P. ADAMS CO., Inc. 243 E. PARK DRIVE
BUFFALO 17, N. Y.

When inquiring check CP 4348 on handy form, pgs. 2-3

MIGHTY IMPORTANT "ACCESSORIES"



FLUSH-BOTTOM VALVES
... Flush-type plug valves are available in all commercial sizes. Made of materials adaptable to corrosive or non-corrosive conditions. Can be specially designed for critical pressures, for hand-wheel or bevel-gear operation.

Men who work with high-temperature, high-pressure equipment appreciate the attention Blaw-Knox gives to every detail of design and fabrication of pressure vessels. Design features exceed ASME and State requirements, assuring a longer useful life for your investment.

Send for Blaw-Knox Bulletin No. 2355

AGITATORS

Many types, each designed to provide strong sweeping motion at heating surface and turbulence of kettle's contents.



PROCESS EQUIPMENT DEPARTMENT
BLAW-KNOX
DIVISION OF BLAW-KNOX COMPANY

2076 FARMERS BANK BLDG., PITTSBURGH 22, PA.

Other Offices in Principal Cities

When inquiring check CP 4349 on handy form, pgs. 2-3

NEW SOLUTIONS of processing problems

Neoprene tube sheet closures
cut one-fifth from cost of
exchange equipment . . .

easily inserted seal employs no threads or bolts; stays flexible to absorb tube movement

Problem: In design and construction of heat transfer equipment for use with corrosive fluids, it has always been a problem to prevent leaks in tube sheet closures. The best methods involve costly materials and high installation costs. Even then, leaks often develop, necessitating constant maintenance and frequent replacement which, in turn, lead to considerable loss in operating time.

In Have equipment, for example, threaded connections must be drawn up carefully in order to prevent fracture of the base material. Thus, much time is consumed in going over the many joints in each piece of equipment and, even then, leakage is considerable.

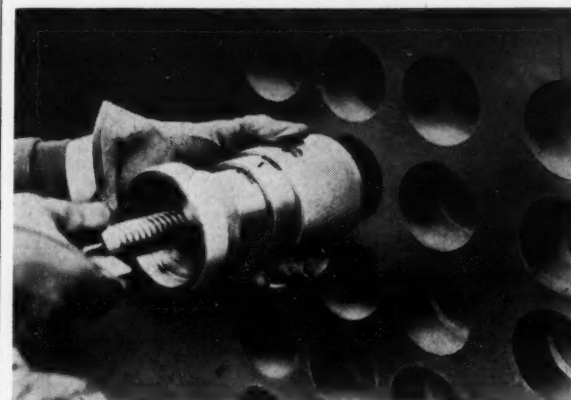


Fig. 1 — A workman inserts seal in tube sheet by turning hand-wheel on tool

A conventional stuffing box arrangement presents another disadvantage. Its packing may become so hard with age that it won't absorb normal expansion and contraction. Hence, tubes break and, sometimes, the equipment body itself fractures.

Solution: The seal illustrated and the method of installing it were developed by engineers in one of the plants of the Du Pont Company. The sealing member, made of specially compounded neoprene stock, is intended for use in tube sheet closures on an HCl cooler-absorber. Used at present only for low-pressure acid service, it could probably be adapted to a wider range of pressures.

Before the seal is inserted in tube sheet, a filler ring (usually of same material as sheet) is placed in the annular space between the two walls. The seal is then clamped in a special tool by tightening the thumb nut of the tool, which retracts an outer and inner member onto a tapered section. This action grips the rear edge of the seal between the retractable member and tapered section.

Turning of hand wheel of the tool causes a circular blade to be driven forward in the annular space within the seal (see Fig. 2). This blade contacts the filler ring (Fig 1), pushing it forward so that it stretches the seal lengthwise, thinning down its inner and outer walls. This permits seal to pass over end of exchanger tube and, at the same time, allows it to be easily inserted inside opening in tube sheet.

Once in place, seal is released from tool. As it recovers

CHEMICAL PROCESSING

NEW SOLUTIONS of processing problems

from its stretched position, it expands into opening between outer wall of tube and the hole in tube sheet. This results in pressure radial to axis of tube along the length of filler ring. The pressure creates a highly efficient seal, comparable to a bolted gasket joint; yet, no bolting or threading of any part is required.

Results: A saving of \$2000 was realized on a piece of equipment originally quoted at \$10,000, when the design was altered to use the neoprene closure. Labor of installation was not appreciably affected, but was slightly in favor of the new closure since there was much less leakage at time of initial test than would ordinarily be expected.

Because the seal is flexible, it permits movement of tube in tube sheet, caused by expansion, contraction or vibration, without loss of sealing efficiency. This flexibility should be nearly permanent since neoprene possesses good aging characteristics. It is, of course, highly resistant to hydrochloric acid.

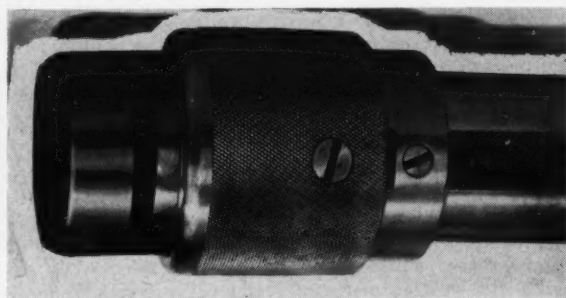


Fig. 2 — Seal clamped in inserting tool. Blade has contacted filler ring inside seal. The seal is cut away for illustrative purposes

While there has been no occasion to remove a tube since the closures were installed, it is anticipated that removal and replacement should be much easier than is the case with conventional seals. Threads are often damaged when removing tubes from conventional seals so that it is often necessary to cement a replacement tube in. This practice removes compensation for expansion and contraction.

On a recent test, using a 2" OD Karbate tube in a Haveg tube sheet, and with seals at both ends of tube to balance end thrust, pressure up to 400 psi caused no leakage. Reinforcement of the tube sheet was, of course, necessary to allow this test. When seal is used as a plug, however, it will probably not be practical for pressures above 10 psi because of the tendency for seal to roll out of the hole. This can probably be controlled somewhat by decreasing original wall thickness of the neoprene seal.

Source: Organic Chemicals Department, E. I. du Pont de Nemours & Co. (Inc.), Dept. CP, Wilmington, Del. . . . or for more information check CP 4350 on handy form, pages 2 and 3.

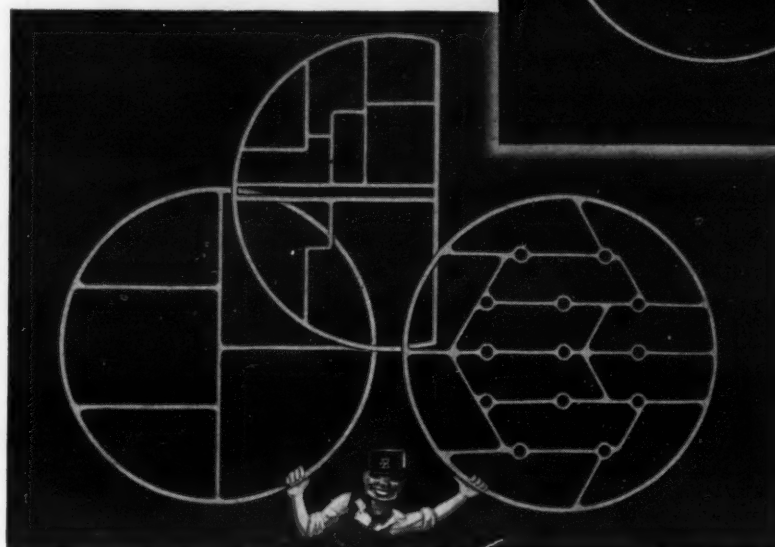
How to clean ferrous metals with alkaline treatment

Eight-page form tells how to clean ferrous metals by alkaline soak tank, spray, and electrolyte. Lesser methods (barrel, steam gun, and manual cleaning) are also described. Procedures and recommended compounds are included. Form S-560 is issued by Special Chemicals Dept. Pennsalt Chemicals, Dept. CP, 1000 Widener Bldg., Philadelphia 7, Pa. When inquiring specify CP 4351 on handy form, pages 2 and 3.

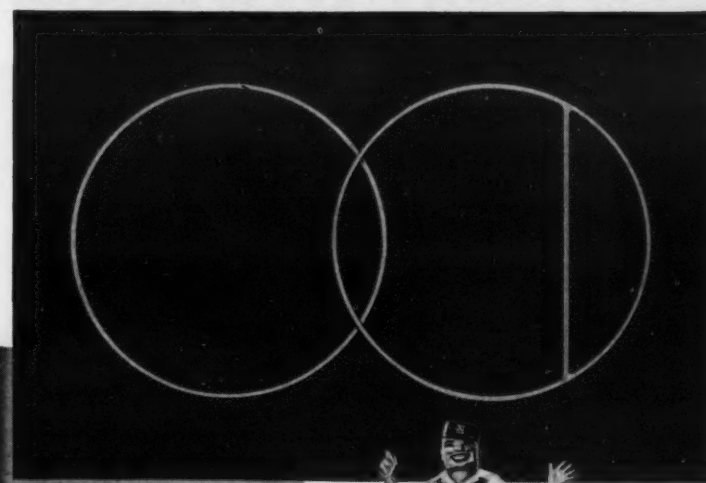
MAY, 1951

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Goetze Heat Exchanger Gaskets stay on the job longer!

Whether your specifications call for a simple or complex design, you can depend on Johns-Manville Goetze heat exchanger gaskets to do the kind of sealing job that costs you less in the long run!

That's because they are carefully hand-tailored to assure the accuracy of fit so important in heat exchanger service. Every detail of construction reflects the craftsmanship that goes into the fabrication of these better gaskets.

You'll find no wrinkles or cracks on the corners. Lap widths are ample, rib widths uniform.

More than 60 years of gasket-making experience is your further assurance that when you put a Goetze heat exchanger gasket on the job you can count on it to stay on the job for a long time. For further details and a prompt estimate of cost, send us a blueprint or template. Just address Johns-Manville, Box 290, New York 16, New York.



Johns-Manville Goetze GASKETS

THERE'S A JOHNS-MANVILLE PACKING AND GASKET FOR EVERY SERVICE

When inquiring check CP 4352 on handy form, pgs. 2-3

For troublesome connections . . .

on a tank car . . .

on dewaxing filters . . .

on a compressor . . .

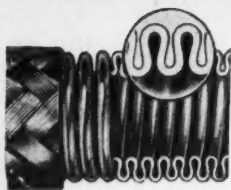
CMH

FLEXIBLE METAL HOSE
offers the economical,
dependable solution

Scores of troublesome connection problems where there is movement between parts, misalignment, vibration or expansion and contraction are effectively solved with CMH Flexible Metal Hose. Manufactured in a variety of types and a variety of metals, CMH Flexible Metal Hose is available for pressures from vacuum to 12,000 psi (burst) and for temperatures from sub zero to 1600° F.

If you do not already have literature describing the CMH line of flexible metal hose products, write for it, today, mentioning the types of connection problems you have.

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Stainless Steel and Brass Bellows • Flexible Metal Conduit and Acmer • Assemblies of These Components

NEW SOLUTIONS of processing problems

Rubber linings are handling boiling HCl, HF solutions — even aqua regia . . .

tantalum producer states this is the only satisfactory solution to his problem at present

Problem: Winning tantalum from tantalite ore, which contains iron and manganese tantalates and columbates, at Tantalum Defense Corp., a subsidiary of Fansteel Metallurgical Corp., North Chicago, Ill., involves severely corrosive conditions at various stages due to the use of hydrochloric and hydrofluoric acids as reagents. Probably the most severe conditions are present in tanks where HCl is used to leach out acid soluble impurities and where HF is used to form soluble Ta and Cb salts from which Ta salt is later crystallized out.

These tanks receive water-leached Ta and Cb salts that have been prepared by fusing crushed and hammer-milled ore with caustic soda in oil fired pots. The salts, in the form of slurry, are dropped into 22" Be' muriatic acid, in the ratio of 3 parts slurry to 1 of acid. Resulting mixture is heated, with agitation, to boiling with 150 psi live steam, and held for 1 or 2 hours. With high manganese ores, free chlorine is liberated, further complicating the corrosion picture.

Impurities are decanted off, and the insoluble Ta and Cb acids are passed to another agitated tank where 70% HF is added, and mixture is boiled to dissolve the Ta and Cb acids. Final HF concentration is about 15%. Potassium carbonate is added to form the soluble double salt K_2TaF_7 and $K_2CbOF_6 \cdot H_2O$. The solution is filtered in a wooden plate and frame press to remove more impurities, and then goes to crystallizing tanks where the Ta salt is crystallized out, leaving the Cb salt in solution.

Production is on a batch basis, making conditions even more difficult because the tanks undergo about 4 heating-cooling cycles per day.

When production was started a number of years ago, wooden tanks and plywood fume ducting were the only types of construction then available for withstanding such severe corrosive conditions. At best, service life here was short due to splintering, warping and shrinkage.

Solution: Rubber lined metal vessels were tried. These proved so satisfactory that when Fansteel built its new plant in 1942, rubber lining was used as standard construction.

Tanks are approximately 6-8' diameter by 8-10' deep and flanged to cone shaped bottoms. Lining is 2 ply — a soft stock for contact and cushioning against the metal tank wall, and a hard stock for contact with the corrosive solutions. Rectangular sheets of this uncured composition are cemented to tank walls and bottom, suitably flashed and cured-on.

Tank agitator blades are also rubber sheathed.

Fume ducts are flanged, cylindrical metal sections — also lined with rubber.

Fansteel has an interesting means for gaining maximum service from rubber lined tanks. Since greatest hardship is encountered on walls near bottoms where heat is introduced, cylindrical sections are detached from cones, inverted to expose new wearing surfaces, and re-flanged to cones.

The crystallizing tanks are also rubber lined because the solution is still quite acid. The K_2TaF_7 crystals remaining after the $K_2CbOF_6 \cdot H_2O$ solution has been siphoned

When inquiring check CP 4353 on handy form, pgs. 2-3

CHEMICAL PROCESSING

NEW SOLUTIONS of processing problems

off are filtered in a rubber lined steel tank that has a Synthane backing supporting the canvas filter medium.

An unusual application for rubber is in revolving tumblers where tantalum metal powder is leached with aqua regia just before it goes to the metallurgical department as 99.9% pure Ta. This operation takes place after drying of K_2TaF_7 crystals, fusion and electrolysis in iron pots, hammer-milling, and concentrating on Deister table. Acid leaching is intermittent; water and alkali washes are used between leaches.

It had been customary to leach with aqua regia in a number of ceramic bowls, mixing acid and metal by



In addition to tank interiors, these vacuum pan filters are lined with rubber. The K_2TaF_7 crystals are dried in next step of process.

hand, after which the acid was washed out by water and the bowls heated to dry the product. Now, the rubber lined tumbler is used in leaching and rinsing, drying still being done in the bowls. It is estimated that the rubber lining lasts about 6 months, even under these conditions.

Results: Company spokesmen believe that rubber is the only material of construction that can be used economically under the conditions present.

Estimates are that rubber linings in the HCl and HF reaction tanks last an average of 3 to 4 years. Linings in ducts last about 8 years. Important is the fact that repairs can be made on the site by patching with unvulcanized rubber compounds and special cement.

Source: Much of the rubber lining used in plant was applied by American Hard Rubber Company, Dept. CP, 11 Mercer St., New York 13, New York . . . or for more information check CP 4354 on handy form, pages 2 and 3.

How to safely clean tanks holding leaded gasoline

Stressing proper methods for removal and disposal of sludge, pocket-sized folder tells how to safely enter and clean leaded gasoline storage tanks. Folder resembles many Armed Forces manuals in that the story is told in cartoons amplified by jingles. Information is aimed directly at the men who do the actual work. Printed in several colors, "Tank Talk" is issued by Petroleum Chemicals Div., E. I. Du Pont de Nemours & Co. (Inc.), Dept. CP, Wilmington, Del. When inquiring specify CP 4355 on handy form pages 2 and 3.

non-toxic, non-corrosive, non-volatile

Gluconic Acid

is the choice for acid detergents

Acid detergents are gaining increasing acceptance for cleaning food and beverage containers and equipment because, by leaving surfaces in an acid condition, the amount of proteolytic bacteria is greatly reduced and the development of offensive odors is prevented.

Gluconic acid is the choice for these detergents because: 1.—It has an extremely low corrosion rate, (one-twentieth that of phosphoric acid on iron surfaces); 2.—It is non-toxic, as evidenced by its usage in food and pharmaceutical products, and 3.—It is non-volatile, a factor of importance where high temperatures may be expected.

Odorless solutions of gluconic acid are also being used successfully to prevent the development of milk-and beerstone formation, without affecting the product flavor. For complete descriptions of these and other uses for this mild, inexpensive acid, write for Pfizer Technical Bulletin No. 33.



PFIZER

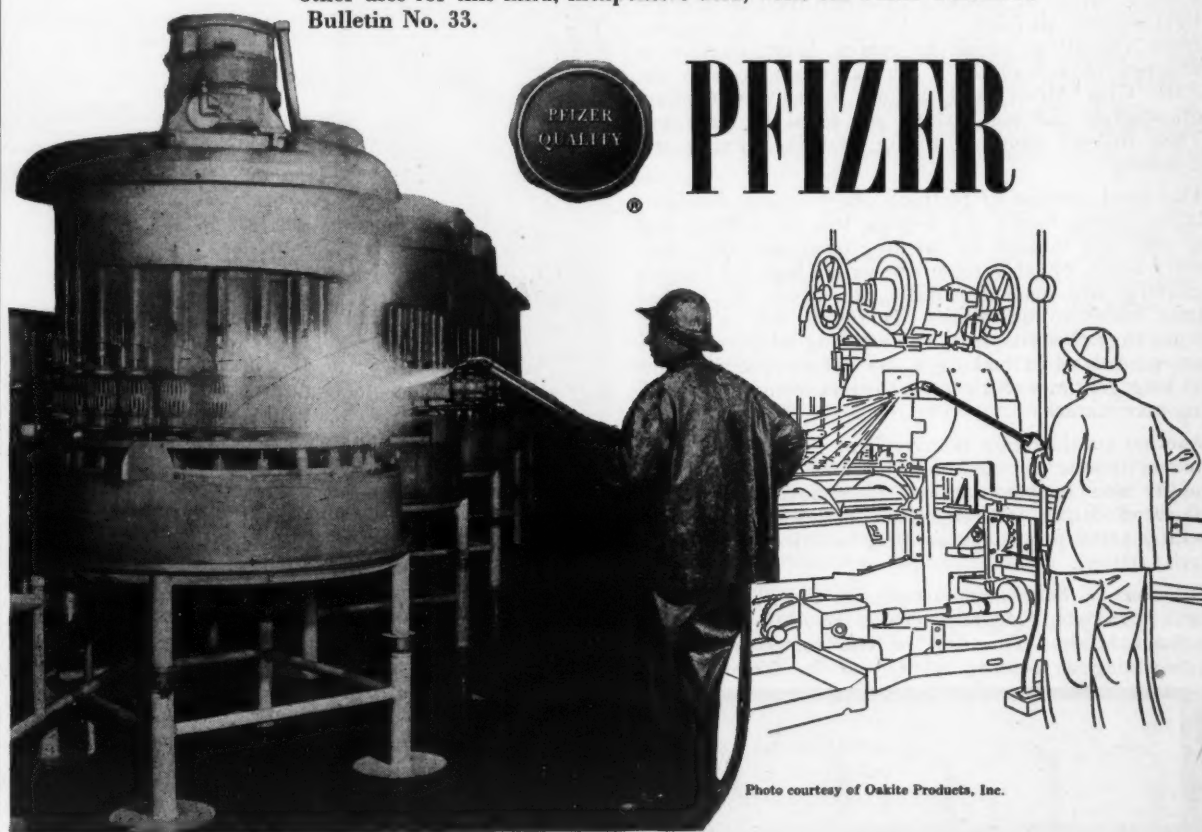


Photo courtesy of Oakite Products, Inc.

GLUCONIC ACID

AMMONIUM GLUCONATE • CALCIUM GLUCONATE • COPPER GLUCONATE • FERROUS GLUCONATE • MAGNESIUM GLUCONATE
MANGANESE GLUCONATE • POTASSIUM GLUCONATE • SODIUM GLUCONATE

CHAS. PFIZER & CO., INC., 630 FLUSHING AVE., BROOKLYN 6, N. Y.; 425 NORTH MICHIGAN AVE., CHICAGO 11, ILL.; 605 THIRD ST., SAN FRANCISCO 7, CALIF.

When inquiring check CP 4356 on handy form, pgs. 2-3

How to reduce blade costs in cutting masonry

Practical instructions on how to reduce blade costs in masonry cutting are contained in illustrated booklet. Contents cover how to run blade cost analysis tests; how to know which blade to use; how abrasive and diamond blades work; how blades are made; when to use an abrasive blade and when to use a diamond blade; how many cuts can be expected per blade; how to tell if a blade is too soft or too hard for a given material; how to get most efficient results; and how to make special or duplicate cuts on a masonry saw.

Booklet 101 is issued by Everyready BrikSaw Company, Dept. CP, 1509 S. Michigan Blvd., Chicago 5, Ill. When inquiring specify CP 4357 on handy form, pages 2 and 3.

Continuous frothing of latex in foam rubber production slashes material loss . . .

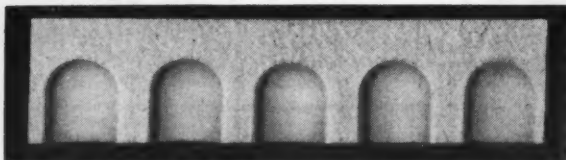
product is improved and more uniform, labor less; can be injected under pressure into molds

Problem: Many manufacturers of foam rubber use a batch process of frothing to obtain the characteristic light-weight, air-filled cellular product. A foaming agent (soap) is added to rubber latex, mixture is whipped to a foam by a vertical mixer such as the AMF Glen Mixer, and gelling ingredients (sodium silicofluoride and zinc oxide) are added to the foam. Then follows molding, curing, washing, drying and trimming.

This batch process of frothing offers certain disadvantages, among them: 1) average loss of material is 8 to 10% due to need for washing bowl and whip after every batch, 2) labor requirements are high for frequent cleaning and manual handling of bowls, 3) foamed latex varies in uniformity, 4) rejects due to human error are rather frequent, 5) very long whipping times are needed when making a low-density product, and 6) long gel times result in foam breakdown with resulting poor texture.

Another consideration is investment. Open type batch mixers require air conditioned rooms to regulate humidity and temperature and to remove NH_3 fumes liberated during frothing (latex is normally supplied with a small percentage of NH_3 to guard against bacterial action).

Solution: Some manufacturers have switched to continuous frothing equipment such as the AMF Oakes Continuous Mixer. This unit receives compounded latex (containing a foaming agent), air for foaming, zinc



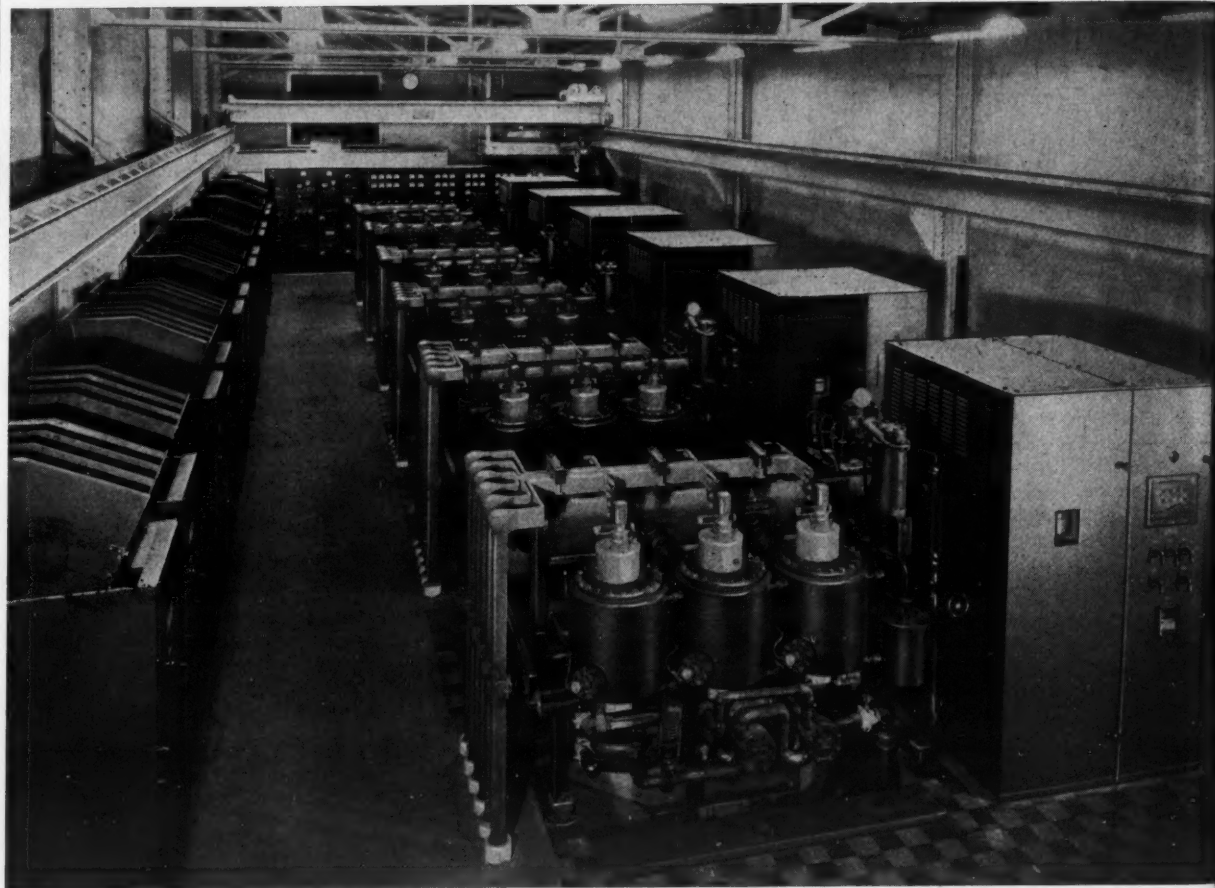
Unretouched photo of foam rubber frothed on the Oakes Continuous Mixer (latex blow-up of 14)

oxide dispersion and sodium silicofluoride dispersion — all delivered in proper proportion — and discharges the foamed latex through two back pressure valves, a nozzle, and hose that goes directly to molds. Production rates up to 1400 lb/hr of wet latex foam are not unknown. Experimental rates are as high as 1800 lb/hr.

Latex enters mixer by positive displacement pump through filter (both included in mixer). The sodium

A PHOTO-REPORT ON MODERN

G-E rectifier system for chlorine cell line gives sure d-c power!



All equipment needed is included in Wyandotte's G-E rectifier system — from incoming power lines to load circuits. Upper floor (shown here) contains six ignitron rectifiers (center), with their anode breakers (left),

and auxiliary control cubicles (right). At far end of room is operator's duplex panel, which centralizes control of all rectifiers and a-c circuits, including additional equipment on floor below.

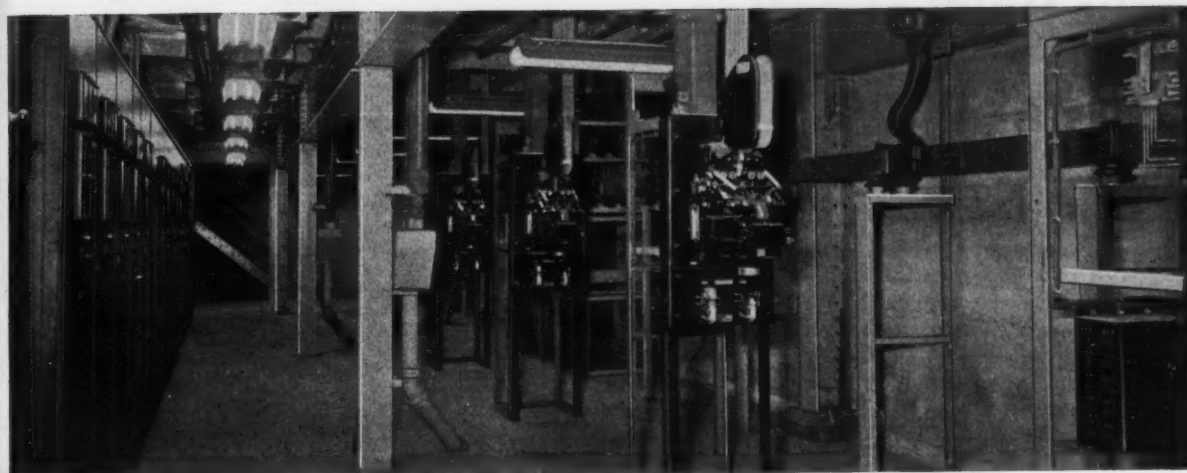
GENERAL



ELECTRIC

662-37

CHEMICAL-PLANT ELECTRIFICATION



Wyandotte Chemicals Corp.—in expanding for greater production—installs complete, co-ordinated G-E system for top reliability and continuity of service

Here's another chemical plant that saved time and trouble by letting General Electric co-ordinate the electric equipment for an entire process. Of modern design and functional layout, this rectifier system embodies the reliability and service continuity that continuous electrolytic processes must have.

Whatever your chemical plant's electrical problems, an experienced G-E application engineer can help you solve them efficiently, economically. Ask your local G-E office. *General Electric Co., Schenectady 5, N. Y.*

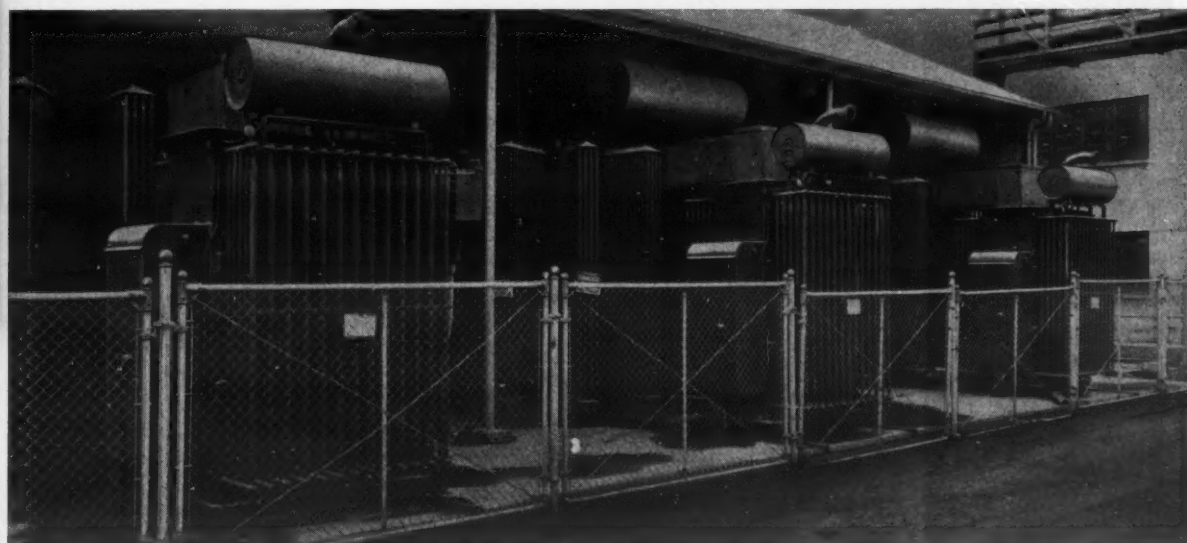
Simple, practical layout was aided by G-E installation drawings. Lower floor houses main 13.8-kv a-c metal-clad switchgear (left) and cathode breakers (center), all controlled from operator's duplex panel on floor above. Note ample space for mounting, and easy maintenance access to cable conduits, d-c bus and disconnecting switches.



DC POWER SYSTEMS

for electro-chemical plants

Outside the station, throat-connected to three rectifier transformers, are three autotransformers (in front), which provide flexible control for the electrolytic process. They are used for phase-shifting to give adequate multi-phase rectifier operation, and for tap-changing to provide the desired range of d-c voltage levels.



When inquiring check CP 4358 on handy form, pgs. 2-3

NEW SOLUTIONS of processing problems

silicofluoride and zinc dispersions are sent to mixer by a suitable standard positive displacement pump such as the dual head, rubber diaphragm Proportioners Model 2-47. Arrangement should be made to damp out pulsations and effect a uniform stream of each dispersion to mixer. Clean, dry air supplied to machine must be at 60 psi or higher; machine's regulator maintains pressure of 60 psi to built-in air flowmeter. Unit is driven from 220/440 volt, 3 phase, 60 cycle line.

The mixer generally produces foam continuously for six hours, after which the heads must be disassembled, cleaned, paraffin-coated and reassembled, an operation usually requiring 30 minutes. Two mixers may be used in parallel and cleaned alternately. Length of time between cleanouts, while assumed as six hours above, actually varies from plant to plant. One manufacturer reports 22 hours, another four, still another eight.

Latex must contain less than 0.15% total alkalinity calculated as NH_3 , except special formulations where higher amounts have been used satisfactorily. Otherwise, the foam cells may collapse quickly, causing a very coarse sponge. De-ammoniating for this mixer is usually best done by batch aeration.

Results: Loss of material has been cut down to about 2% with the continuous mixer. Product is more uniform, particularly with respect to density and cell size. It is much improved as to fineness of texture. Scrap is less too; one manufacturer reduced it from 20% with batch mixers to about 5% with the continuous mixer. In plants producing upwards of 1000 lb/hr of foam latex, reduction in direct labor force amounts to about six people.

A predetermined density can be obtained at will and held uniform (within 1%) at that point, depending on uniformity of formulation going to frothing unit. Lower density foam rubber can be made than in the batch process. The foam is more stable, permitting longer gel times.

At production rates above 400 lb of light density foamed latex per hour, investment required for foaming equipment is less. In addition, floor space requirement is less, and refrigerated, air conditioned mixing rooms are not needed.

With the Oakes mixer, injection molding may be used. The lids of the cavities may be closed, and the mold filled by pressure direct from the mixer. This eliminates overflow, trims, material losses, and cleaning labor, and generally produces an improved product.

Source: The Oakes Continuous Mixer is made by American Machine & Foundry Company, Dept. CP, 485 Fifth Ave., New York 17, N. Y. . . . or for more information check CP 4359 on handy form, pages 2 and 3.

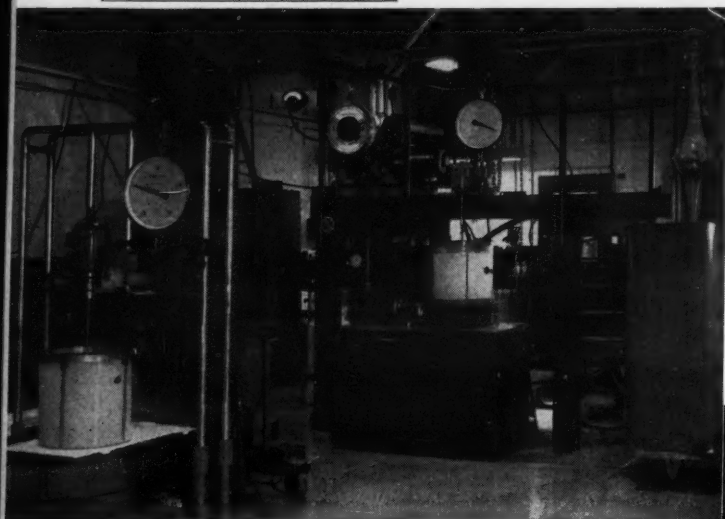
Solving clamshell bucket maintenance problems

Illustrated bulletin contains 42 pages of practical and useful information on maintenance and care of clamshell buckets. Included are suggestions on proper use.

Contents tell how to straighten distorted bucket lips, with details on repairing fractures, hard surfacing cutting edges, and rebuilding worn cutting edges; how to reeve the bucket for maximum efficiency; and how to prolong bucket cable life. Diagrammed instructions are also given for the replacement of components. Bulletin 2373 is issued by Blaw-Knox Div. of Blaw-Knox Company, Dept. CP, Farmers Bank Bldg., Pittsburgh 22, Pa. When inquiring specify CP 4360 on handy form, pages 2 and 3.

2

REASONS FOR CALLING IN MIXCO to supply fluid agitation on your next project

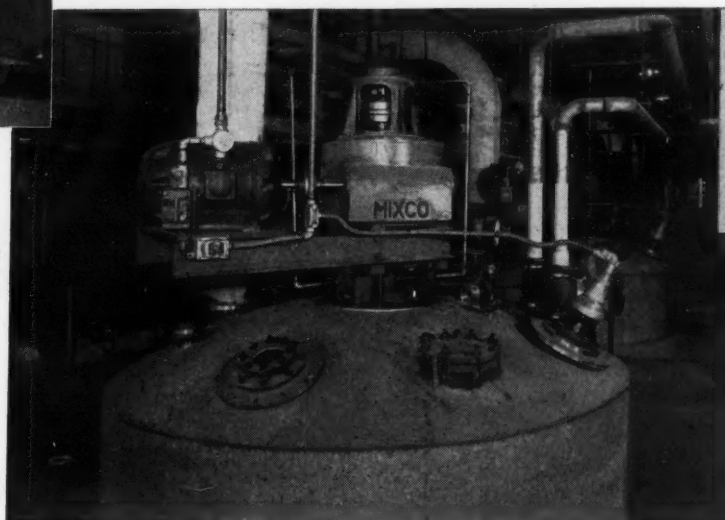


MIXCO research and development laboratory

2. EQUIPMENT . . . Lightnin Mixers are built for the critical years ahead. They are constructed for continuous heavy duty, with minimum maintenance. Interchangeable components make it easy to change the mixer from one type of installation to another—even from one speed to another—as your requirements change. Spare parts are standard and can be replaced quickly by any workman.

Write today for assistance on any fluid agitation problem, and for helpful literature on Lightnin Mixers.

1. TECHNOLOGY . . . Why guess, when you can be sure about fluid agitation? Mixco engineers choose correct agitation for you on the basis of viscosity, specific gravity, proximity, speed, power consumption and many other carefully considered factors. Exclusive Mixco data on impeller pumping capacities, critical shaft speeds, practical shaft lengths and other variables, saves you many an engineering headache, avoids costly trial-and-error, and gives you best possible agitation at minimum power cost. Results are guaranteed!



LIGHTNIN heavy duty turbine agitators

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| <input type="checkbox"/> B-76 Side Entering Mixers | <input type="checkbox"/> DH-50 Laboratory Mixers |
| <input type="checkbox"/> B-78 Top Entering Mixers (Propeller Type) | <input type="checkbox"/> B-36 Condensed Catalog showing complete line |
| <input type="checkbox"/> B-89 Top Entering Mixers (Turbine and Paddle Type) | <input type="checkbox"/> B-75 Portable Mixers (Electric and Air Driven) |

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LIGHTNIN PORTABLE MIXERS
World's largest-selling line. Electric or air motor, direct or gear drive. Sizes 1/4 to 3 HP.

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For tanks up to 5 million gallons. Gear motor or V-belt drive; motorless types. Sizes 1 to 25 HP.

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Turbine, propeller and paddle types. For open or closed tanks. 16 speeds available in new heavy duty drive. Sizes 1/4 to 500 HP.

A COMPLETE LINE . . . UNEXCELLED TECHNOLOGY

NEW SOLUTIONS

Records liquid ammonia flow to accuracy of 1 1/2 % . . .

plant employs bellows instrument instead of mercury type

Problem: A chemical plant in the West needed some means of metering amount of liquid ammonia being loaded into tank cars. Engineers were considering using a mercury type recorder because it offered certain advantages that they liked. However, ammonia under high pressure will form an unstable compound with mercury which will break down rather violently when system pressure is reduced. This has caused explosions in other plants.

Solution: Company conducted some tests concerned with performance of a bellows type flow recorder when measuring liquid ammonia flow. Tank cars were weighed before and after loading, and the chart produced by recorder was checked for total quantity of material loaded by use of a square root planimeter. These quantities were compared to find how meter readings deviated.

The recorder employed was a Barton Model 202. It has a rupture proof bellows so that a differential pressure up to pressure rating of housing may be imposed across bellows mechanism without any damage whatsoever. Recorder also contains an internal, adjustable pulsation dampener which controls rate of flow of hydraulic fluid, within bellows mechanism, from one bellows chamber to the other. This adjustment may be made while meter is in service.

Results: After enough test runs to obtain a fairly reliable pattern of recorder performance, it was found that the integrated quantity had not varied from the weighed quantity by more than plus or minus 1 1/2 %.

In view of the fact that the coefficient as determined for orifice plate (primary device used here) would have a certain small degree of wandering, and in view of the fact that there is also some inaccuracy in hand integration, it appears that this deviation indicates a very satisfactory instrument performance.

Source: Model 202 Recorder is made by Barton Instrument Corporation, Dept. CP, 1429 South Eastern Ave., Los Angeles 22, Calif. . . . or for more information check CP 4361 on handy form, pages 2 and 3.

For more information on product at left, specify CP 4362 . . . see information request blank between pages 2-3.

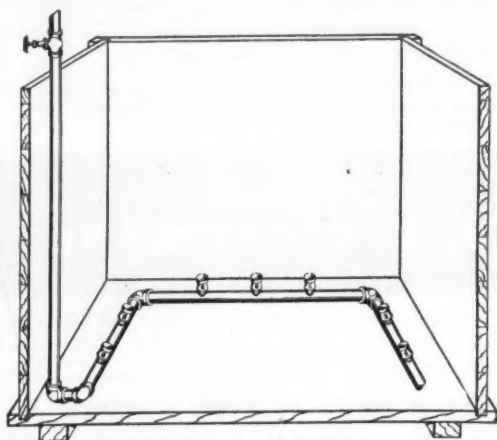
**Sparger performance improved
by use of nozzles that cut
noise, aid mixing . . .**

threaded nozzles are easily replaced, actually reduce maintenance costs

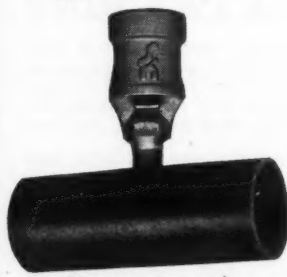
Problem: A large Eastern brewery found that frequent replacement of drilled pipe used in direct steam heating of liquids in a tank represented considerable expense in materials, down-time and labor.

High steam velocities and corrosion were responsible for the excessive wear of the drilled holes. In addition, heating was very slow and resulted in non-uniform temperatures throughout the tank. Heating was accompanied by extremely loud, cracking noises.

Solution: It was decided to attach threaded nozzles to the pipes. Steam issues from the tip of the steam nozzle at high velocity, entraining tank liquid from the



Typical arrangement of nozzles
in a rectangular tank



Close-up of a nozzle

open area on each side of the nozzle. Steam and tank liquid are thoroughly mixed in the nozzle chamber and are then discharged with sufficient force to cause constant agitation within the tank.

Results: Replacement costs have been greatly decreased; whenever a nozzle is worn out, it is a simple matter to screw a new one into the pipe. Operation is considerably quieter.

Thorough mixing and constant agitation yield faster heating and more uniform tank temperatures. Heating efficiency attained by using nozzles is shown by one test in which 40 psi steam, flowing at a rate of 183 pounds per hour from one nozzle in a 100-gal tank, circulated 20 gpm of water and raised liquid temperature 40° in 11 minutes.

For use with corrosive liquids, nozzles are made in bronze, cast iron, stainless steel and Havg.

Source: Sparger Nozzles are products of Schutte and Koerting Company, Dept. JB, Dept. CP, 12th and Thompson Sts., Philadelphia 22, Pa. . . or for more information check CP 4363 on handy form, pages 2 and 3.

PROCESSING MACHINERY BULLETIN

Reporting News and Machine Design Developments

IN BUSINESS TO



REDUCE YOUR COSTS

CHANGE MILL GUIDES ON NRM LABORATORY MILL IN 3 MINUTES

On NRM's Model 48 Laboratory Mill, stainless steel mill guides of advanced design permit change in set-ups, or replacement for cleaning, in three minutes or less.

Such attention to the research man's problems is inherent in NRM mills, which have been designed in cooperation with leading industrial research laboratories and government and university laboratories.

NRM mills are available with roll diameters of 4", 6", or 10", for roll lengths of 9", 12", or 20". The forged steel rolls are mounted in tapered roller bearings. Leakproof pressure joints with internal piping eliminate the need for packing.

The mills are fully enclosed, suitable for use on high-temperature milling. A



knee safety stop and a plugging safety stop are provided.

NRM's line of laboratory mills, calenders, washers, tubing machines and allied equipment provide tools for sound, accurate research. For full information, write National Rubber Machinery Company, 47 West Exchange Street, Akron 8, Ohio.

Fatigue testing machine records number of flexes



This unit was developed for fatigue testing and the ASTM Flex Test. Specimens clamped between the two horizontal jaws are flexed when the lower jaw is moved by reciprocating action. The number of flexes is recorded on a counter, which stops when the test specimen breaks.

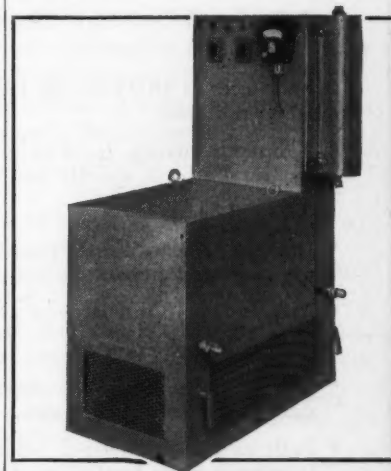
If accelerated tests, or tests at high temperatures are desired, the NRM Model D machine can be built into a constant-temperature electric oven. Temperature is thermostatically controlled. A timer is provided.

PROVIDES CIRCULATING OIL AT TEMPERATURES TO 575° F.

Developed originally for plastics extruders, the NRM oil heating and circulating unit can be used to service any machine or process requiring circulating oil at temperatures up to 575°F. Capacity is 5 gallons per minute.

The oil passes over the full area of three 6-KW immersion heaters. Temperature is maintained at the desired level within an accuracy of two degrees by thermostatic controls.

The unit can be switched over to cold oil at any time. When cold oil is circulated, the heaters are automatically shut off and the oil in the reservoir and heating chambers does not circulate. Thus a reserve of hot oil is maintained for starting.



For complete information write Plastics Machinery Division, National Rubber Machinery Company, Akron 8, O.

NATIONAL RUBBER MACHINERY CO.

General Offices & Engineering Laboratories
Akron 8, Ohio

PLANTS at Akron and Columbiana, Ohio and Clifton, N. J.
AGENTS East: National Rubber Machinery Co., Clifton, N. J.
West: S. M. Kipp, Box 441, Pasadena 18, Calif.
EUROPE Rubber Machinery: GILLESPIE & COMPANY
96 Wall Street, New York 5, N. Y.

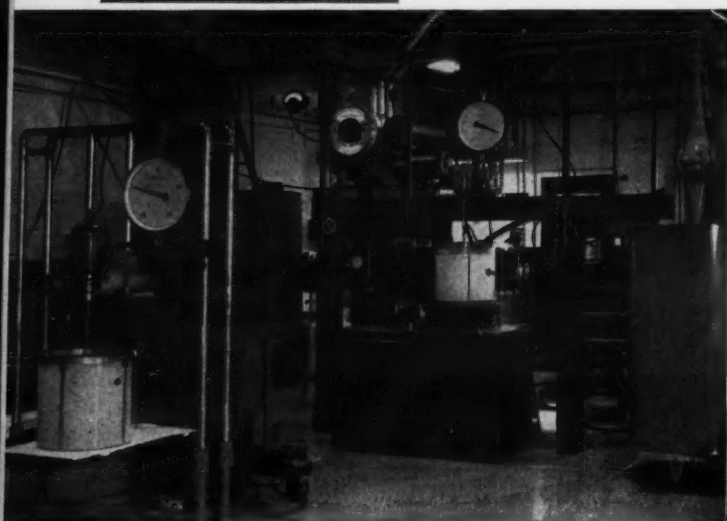
*Creative
Engineering*

When inquiring check CP 4364 on handy form, pgs. 2-3

2

REASONS FOR CALLING IN MIXCO

to supply fluid agitation on your next project

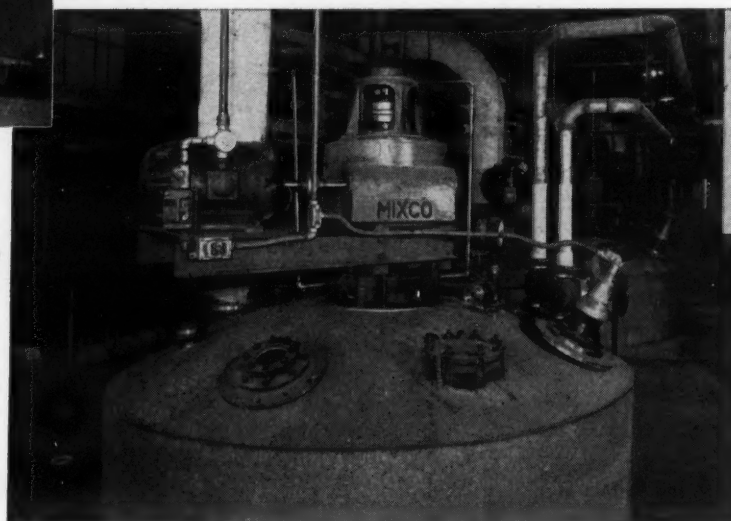


MIXCO research and development laboratory

2. EQUIPMENT... Lightnin Mixers are built for the critical years ahead. They are constructed for continuous heavy duty, with minimum maintenance. Interchangeable components make it easy to change the mixer from one type of installation to another—even from one speed to another—as your requirements change. Spare parts are standard and can be replaced quickly by any workman.

Write today for assistance on any fluid agitation problem, and for helpful literature on Lightnin Mixers.

1. TECHNOLOGY... Why guess, when you can be sure about fluid agitation? Mixco engineers choose correct agitation for you on the basis of viscosity, specific gravity, proximity, speed, power consumption and many other carefully considered factors. Exclusive Mixco data on impeller pumping capacities, critical shaft speeds, practical shaft lengths and other variables, saves you many an engineering headache, avoids costly trial-and-error, and gives you best possible agitation at minimum power cost. Results are guaranteed!



LIGHTNIN heavy duty turbine agitators

MIXING EQUIPMENT Co., Inc.

(MIXCO)

185 Mt. Read Blvd., Rochester 11, N. Y.

In Canada: William & J. G. Greey, Ltd., Toronto

Please send me the literature checked:

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| <input type="checkbox"/> B-76 Side Entering Mixers | <input type="checkbox"/> DH-50 Laboratory Mixers |
| <input type="checkbox"/> B-78 Top Entering Mixers (Propeller Type) | <input type="checkbox"/> B-36 Condensed Catalog showing complete line |
| <input type="checkbox"/> B-89 Top Entering Mixers (Turbine and Paddle Type) | <input type="checkbox"/> B-75 Portable Mixers (Electric and Air Driven) |

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MAKERS OF

Lightnin® Mixers



LIGHTNIN
PORTABLE
MIXERS

World's largest-selling line. Electric or air motor, direct or gear drive. Sizes 1/4 to 3 HP.

LIGHTNIN
SIDE ENTERING
MIXERS

For tanks up to 5 million gallons. Gear motor or V-belt drive; motorless types. Sizes 1 to 25 HP.

LIGHTNIN
TOP ENTERING
AGITATORS

Turbine, propeller and paddle types. For open or closed tanks. 16 speeds available in new heavy duty drive. Sizes 1/4 to 500 HP.

A COMPLETE LINE . . . UNEXCELLED TECHNOLOGY

NEW SOLUTIONS

Records liquid ammonia flow to accuracy of 1 1/2 % . . .

plant employs bellows instrument instead of mercury type

Problem: A chemical plant in the West needed some means of metering amount of liquid ammonia being loaded into tank cars. Engineers were considering using a mercury type recorder because it offered certain advantages that they liked. However, ammonia under high pressure will form an unstable compound with mercury which will break down rather violently when system pressure is reduced. This has caused explosions in other plants.

Solution: Company conducted some tests concerned with performance of a bellows type flow recorder when measuring liquid ammonia flow. Tank cars were weighed before and after loading, and the chart produced by recorder was checked for total quantity of material loaded by use of a square root planimeter. These quantities were compared to find how meter readings deviated.

The recorder employed was a Barton Model 202. It has a rupture proof bellows so that a differential pressure up to pressure rating of housing may be imposed across bellows mechanism without any damage whatsoever. Recorder also contains an internal, adjustable pulsation dampener which controls rate of flow of hydraulic fluid, within bellows mechanism, from one bellows chamber to the other. This adjustment may be made while meter is in service.

Results: After enough test runs to obtain a fairly reliable pattern of recorder performance, it was found that the integrated quantity had not varied from the weighed quantity by more than plus or minus 1 1/2%.

In view of the fact that the coefficient as determined for orifice plate (primary device used here) would have a certain small degree of wandering, and in view of the fact that there is also some inaccuracy in hand integration, it appears that this deviation indicates a very satisfactory instrument performance.

Source: Model 202 Recorder is made by Barton Instrument Corporation, Dept. CP, 1429 South Eastern Ave., Los Angeles 22, Calif. . . . or for more information check CP 4361 on handy form, pages 2 and 3.

For more information on product at left, specify CP 4362 . . . see information request blank between pages 2-3.

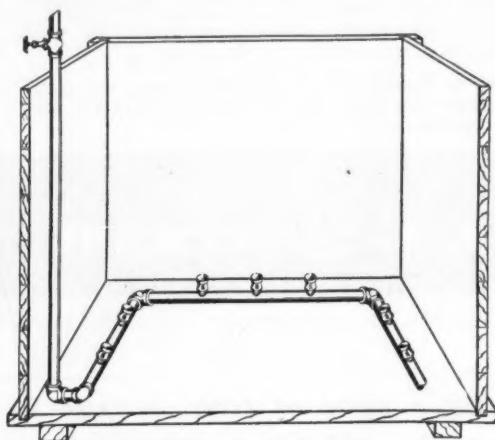
**Sparger performance improved
by use of nozzles that cut
noise, aid mixing . . .**

threaded nozzles are easily replaced, actually reduce maintenance costs

Problem: A large Eastern brewery found that frequent replacement of drilled pipe used in direct steam heating of liquids in a tank represented considerable expense in materials, down-time and labor.

High steam velocities and corrosion were responsible for the excessive wear of the drilled holes. In addition, heating was very slow and resulted in non-uniform temperatures throughout the tank. Heating was accompanied by extremely loud, cracking noises.

Solution: It was decided to attach threaded nozzles to the pipes. Steam issues from the tip of the steam nozzle at high velocity, entraining tank liquid from the



Typical arrangement of nozzles
in a rectangular tank



Close-up of a nozzle

open area on each side of the nozzle. Steam and tank liquid are thoroughly mixed in the nozzle chamber and are then discharged with sufficient force to cause constant agitation within the tank.

Results: Replacement costs have been greatly decreased; whenever a nozzle is worn out, it is a simple matter to screw a new one into the pipe. Operation is considerably quieter.

Thorough mixing and constant agitation yield faster heating and more uniform tank temperatures. Heating efficiency attained by using nozzles is shown by one test in which 40 psi steam, flowing at a rate of 183 pounds per hour from one nozzle in a 100-gal tank, circulated 20 gpm of water and raised liquid temperature 40° in 11 minutes.

For use with corrosive liquids, nozzles are made in bronze, cast iron, stainless steel and Havg.

Source: Sparger Nozzles are products of Schutte and Koerting Company, Dept. JB, Dept. CP, 12th and Thompson Sts., Philadelphia 22, Pa. . . or for more information check CP 4363 on handy form, pages 2 and 3.

PROCESSING MACHINERY BULLETIN

Reporting News and Machine Design Developments

IN BUSINESS TO



REDUCE YOUR COSTS

CHANGE MILL GUIDES ON NRM LABORATORY MILL IN 3 MINUTES

On NRM's Model 48 Laboratory Mill, stainless steel mill guides of advanced design permit change in set-ups, or replacement for cleaning, in three minutes or less.

Such attention to the research man's problems is inherent in NRM mills, which have been designed in cooperation with leading industrial research laboratories and government and university laboratories.

NRM mills are available with roll diameters of 4", 6", or 10", for roll lengths of 9", 12", or 20". The forged steel rolls are mounted in tapered roller bearings. Leakproof pressure joints with internal piping eliminate the need for packing.

The mills are fully enclosed, suitable for use on high-temperature milling. A



knee safety stop and a plugging safety stop are provided.

NRM's line of laboratory mills, calendars, washers, tubing machines and allied equipment provide tools for sound, accurate research. For full information, write National Rubber Machinery Company, 47 West Exchange Street, Akron 8, Ohio.

Fatigue testing machine records number of flexes



This unit was developed for fatigue testing and the ASTM Flex Test. Specimens clamped between the two horizontal jaws are flexed when the lower jaw is moved by reciprocating action. The number of flexes is recorded on a counter, which stops when the test specimen breaks.

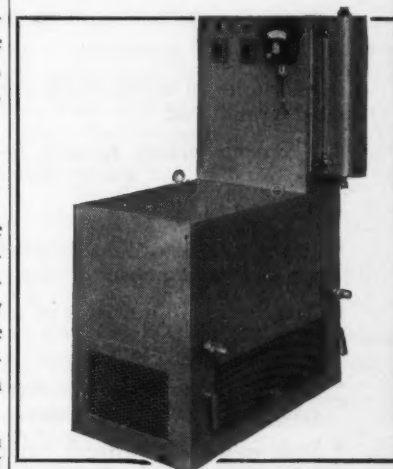
If accelerated tests, or tests at high temperatures are desired, the NRM Model D machine can be built into a constant-temperature electric oven. Temperature is thermostatically controlled. A timer is provided.

PROVIDES CIRCULATING OIL AT TEMPERATURES TO 575° F.

Developed originally for plastics extruders, the NRM oil heating and circulating unit can be used to service any machine or process requiring circulating oil at temperatures up to 575°F. Capacity is 5 gallons per minute.

The oil passes over the full area of three 6-KW immersion heaters. Temperature is maintained at the desired level within an accuracy of two degrees by thermostatic controls.

The unit can be switched over to cold oil at any time. When cold oil is circulated, the heaters are automatically shut off and the oil in the reservoir and heating chambers does not circulate. Thus a reserve of hot oil is maintained for starting.



For complete information write Plastics Machinery Division, National Rubber Machinery Company, Akron 8, O.

NATIONAL RUBBER MACHINERY CO.

PLANTS at Akron and Columbiana, Ohio and Clifton, N. J.
AGENTS East: National Rubber Machinery Co., Clifton, N. J.
West: S. M. Kipp, Box 441, Pasadena 18, Calif.
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96 Wall Street, New York 5, N. Y.

General Offices & Engineering Laboratories
Akron 8, Ohio

*Creative
Engineering*

When inquiring check CP 4364 on handy form, pgs. 2-3

Buflovak-Dopp Kettles with Double Motion Agitators

**SAVE Time and Production Costs
in Processing Heavy Viscous Materials**



2750-Gallon BUFLOVAK-DOPP Grease Kettle.

Investigate these BUFLOVAK Features for your processing problem:

- * Thorough mixing, freedom from lumps and stratification . . . quickly and efficiently.
- * No local overheating.
- * Increase of heat transfer rates for rapid heating and cooling cycles.
- * Easy and rapid discharge of material.
- * Safe, quiet operation.
- * Sturdy construction . . . dependable operation . . . low maintenance cost.
- * Built in sizes from 1-gal. laboratory units to largest plant size kettles.
- * Facilities available for pre-testing operation.

Write for complete information.

BUFLOVAK EQUIPMENT DIVISION

of Blaw-Knox Company

1645 Fillmore Ave.

Buffalo 11, N. Y.

When inquiring check CP 4365 on handy form, pgs. 2-3

NEW SOLUTIONS of processing problems

Workers lower overhead lights to ground instead of using ladders to service them . . .

disconnecting hangers provide pulley for lowering, raising "dead" fixture for cleaning, relamping

Problem: Large industrial plant in Cleveland depended upon lights placed on poles 25' above ground for illumination of plant yard and building walkways. Maintenance men had to service these lights from high ladders. This was a slow, laborious job and involved various hazards such as automobiles and other traffic passing through yard area.

Solution: Disconnecting and lowering lighting fixtures replaced the permanently installed equipment. Two pole outdoor hangers incorporate deep canopies which protect lighting fixture and its connections from weather. The individual light poles employ from three to six hangers, each of which is controlled independently from ground level and can be lowered for servicing whenever this is necessary.

Constructed of corrosion-resistant alloys, these outdoor type hangers consist of two members, upper and lower. Fixed upper member contains a pulley wheel for the operat-



Hanger disconnects, fixture lowers for safe servicing

ing chain or cable, a guide tube for positive repositioning, and a pair of cup type contacts to which power feed lines are attached. Lower member (which supports lighting fixture) contains the positioning stem, latching mechanism, and a pair of ball-faced contacts which join the upper contacts to complete the circuit when the fixture is raised. Since the lowered fixture is "dead", there is no electrical hazard involved when maintenance man cleans or relamps the unit.

Results: Hazards are eliminated, as there is no longer any danger of workers falling from ladders or receiving electric shock. Much better servicing job is possible, as so little time is required that it is practical to give each or all lighting units attention whenever required. Savings in time and labor involved are apparent.

Source: Thompson Electric Co., Dept. CP, 1101-88 Power Ave., Cleveland 14, Ohio . . . or for more information check CP 4366 on handy form, pages 2 and 3.

WHITE PORCELAIN

MILL JARS

Made from tough-bodied white chemical porcelain. Wide mouth makes loading and unloading easy. Positive locking cross bar and lid is controlled by large non-slip hand wheel. Gasket comes out with the lid. Roalox Mill Jars are available for immediate shipment in six sizes: 1 quart, 2 quarts, 1, 2, 4 and 6 gallons. On the quart and two-quart size clamping arrangement differs slightly.



Fig. 774
Roalox Mill Jar

Write for Catalog 260 showing our complete line of Jar Mills, Mill Jars, Ball Mills and other Grinding and Mixing Equipment.

U. S. STONEWARE

Since 1865 • Akron, Ohio

When inquiring check CP 4367 on handy form, pgs. 2-3

many a year of free storage in NEFF & FRY BINS



• Long after the original cost has been written off, Neff & Fry Bins continue to give unimpaired service for an indefinite period with scarcely any maintenance expense. That's what we mean by "free storage."

The distinguishing feature of a Neff & Fry Bin is the diagonally pointed Super-Concrete Stave . . . almost as hard and dense as rock because formed under 140 tons hydraulic pressure.

Super-Concrete Staves do not spall. Consequently, a Neff & Fry Bin never needs a face-lifting job. And, of course, Super-Concrete Staves don't rust, rot, shrink, buckle, or burn.

All sorts of flowable bulk materials are handled and stored in Neff & Fry Bins. The photograph shows a pair of 18' x 20' bins used for boiler-room coal.

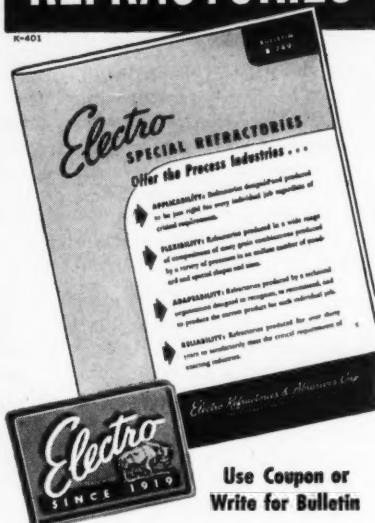


If you are immediately or remotely interested in silo-type storage, ask us for literature and specific information.

THE NEFF & FRY CO. • 166 Elm Street
Camden, Ohio

When inquiring check CP 4368 on handy form, pgs. 2-3

LEARN about UNIQUE BASIC RAW MATERIAL ELECTRO-CARB Special REFRACTORIES



Specialists in silicon carbide and in products made from this unique basic raw material, Electro has acquired technical competence and "know-how" both in the production and application of Electro-Carb (silicon carbide) and products made from it. This specialization may be of high service to you.

The coupon will bring you Bulletin B-749 and supplement K-378, both in almost telegraphic brevity as to facts and figures

concerning SPECIAL REFRACTORIES COUPON

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344 Delaware Ave. Est. 1919 Buffalo 2, N. Y.

Please send us Special REFRACTORIES Bulletin B-749 and Sup. K-378.

Firm.....

Address.....

City..... Zone..... State.....

Att. of: Name..... Title.....

When inquiring check CP 4369
on handy form, pgs. 2-3

NEW SOLUTIONS of processing problems

(Continued from page 9)

burnables are in trace quantities or in concentrations approaching the lower limits of flammability — and the end products are entirely carbon dioxide and water vapor.

Initial exploratory tests on catalytic combustion of phthalic anhydride fumes at Reichhold were successful and led to the construction of a pilot plant set-up in the Reichhold laboratories where more intensive investigations were carried on. Following this an initial production unit was constructed, and its operating results formed the basis for Reichhold's design and installation of additional units to handle all effluent.

These units (known as "Catalytic Incinerators") include a heat exchanger, gas burner, and catalyst elements, arranged as shown on the flow sheet, illustrated. Heat exchanger causes initial preheating of fumes from 70°F, and the burner supplies the additional heat to bring the fumes up to 650°F to initiate catalytic combustion. Catalysts elements are constructed in the form of rectangular, metallic mats similar in appearance to metallic air filter elements. Heat exchanger also serves to revolatilize any sublimed crystals of phthalic anhydride in order to make catalytic combustion possible, and prevents the possibility of any condensate or sublimation of burnables occurring within the system that might cause flash-backs or fires.

Temperature rise resulting from oxidation of the fumes as they pass through the catalyst depend, of course, upon fume concentration. This rise may vary from 15 to 180°F depending upon efficiency of the phthalic anhydride generating process. Oxidized gases transfer a portion of this heat to the incoming fumes in passing through the heat exchanger before being discharged to the stack.

Presently there are a total of 24 Catalytic Incinerators in operation at Reichhold. Several of the early production units are now credited with more than 8000 operating hours each. Catalyst elements have not required reactivation or other service.

Oxidation of all combustible fumes averages about 95% complete and is now economically possible at lower temperatures. Effluent being void of all solid particles and odorous fumes, can be discharged into the atmosphere without offense.

Catalytic combustion for disposal of noxious fumes in other industries has also met with success. Oils dried from inks in a high speed paper printing process are being handled... volatilized binding materials exhausted from firing furnaces in the manufacture of porcelain insulators for spark plugs are being consumed... vapors being discharged from rubber plasticators in rubber reclaiming are completely consumed to an odor-free gas... waste gases containing the odor of decomposed flesh in drug manufacture can be treated... and thinners expelled from asphalt base paints in baking ovens are being disposed of.

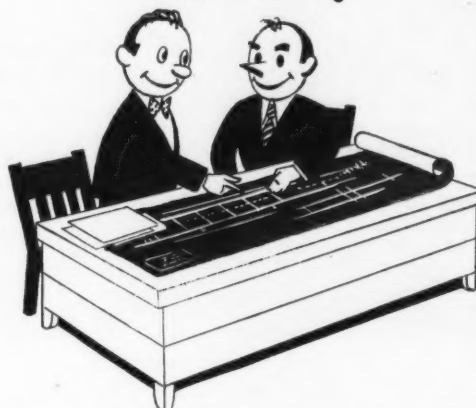
("Catalytic Incinerators" and the process of Catalytic Combustion are a development of the Catalytic Combustion Corporation, Dept. CP, 4544 Grand River Avenue, Detroit 8, Mich. . . or for more information check CP 4370 on handy form, pages 2 and 3.)

Shows metallizing for salvage

Stressing the use of metallizing for salvaging such parts as sheave wheels and piston shafts, 4-page "Metco News", Vol. 5, No. 7, is issued by Metallizing Engineering Co., Inc., Dept. CP, 38-14 Thirtieth St., Long Island City 1, N.Y. When inquiring specify CP 4371 on handy form, pages 2 and 3.

TIPS ON SOLVING DRYING PROBLEMS

JUST HOW DOES CONSULTING PROCTOR ENGINEERS EARLY PAY OFF?



Taking Proctor engineers into your confidence just as soon as you know that drying is to be a part of your processing line usually pays off in substantial savings—for you! It makes such plain common sense when you stop to think about it. When drying is a part of a process it is usually a vital link. As such, the equipment should be considered at the very outset of your planning. Its design is dependent upon a number of factors . . . the capacity desired and physical characteristics of the product being two of the chief considerations. Proctor engineers may recommend that to obtain a desired capacity, the product be delivered to the dryer in a certain state and this may govern the type of preliminary equipment needed. Then too, characteristics of the dried material may affect the type of subsequent equipment you will need. That is why it is advisable to consider the problem—as a whole and early! You save time, effort and money by consulting Proctor engineers early. Write today for Bulletin 361 for the complete story of the Proctor approach to solving drying problems. For a lucid explanation of Proctor Drying Systems for the Process Industries, ask for Bulletin 342 as well.

A FEW TYPICAL MATERIALS BEING DRIED IN PROCTOR CONTINUOUS CONVEYOR SYSTEMS

Starch
Titanium Dioxide
Sulfa Drugs
Calcium carbonate
Magnesium carbonate
Clay
White Lead
Finished Lithopone
Soy Bean Protein
Lead Arsenate
Nitro Guanidine

PROCTOR CONTINUOUS CONVEYOR SYSTEMS

PROCTOR & SCHWARTZ INC. • 663 TABOR ROAD • PHILADELPHIA 20 • PA •

When inquiring check CP 4372 on handy form, pgs. 2-3

Development Lots of Pyrrolidine, Versatile, Reactive Intermediate, Are Now Available

USES: Suggested applications include: 1) formation of rubber accelerators, with carbon disulfide, similar to those obtained from piperidine. 2) Formation of N-alkyl pyrrolidines, with alkyl halides, which can be converted to quaternary bases of possible use as sterilizers and surfactants.

3) Useful for introducing the pyrrolidyl rings, a physiologically active nucleus, found in many natural products such as alkaloids.

4) With ethylene oxide, pyrrolidine gives an alkanolamine — N-hydroxyethyl pyrrolidine. 5)

Functions as a solubilizer for acidic materials and 6) as a catalyst and reaction medium for certain organic reactions.

Features: Highly reactive, versatile intermediate is available in development quantities at minimum purity of 95%. Potentially available in commercial amounts. Miscible with water and most organic solvents (forms base with dissociation constant of 1.3×10^{-8} in water).

Description: Synthetic pyrrolidine is a colorless, mo-

May prove useful in preparing rubber accelerators, sterilizers, surfactants and poisons

bile liquid with a penetrating amine-like odor. Other properties are listed in table.

| | |
|---|---------|
| Molecular weight | 71.12 |
| Freezing point | -63°C |
| Boiling point | 86-87°C |
| Specific gravity, 20/4 | 0.8618 |
| Index of refraction, N ₂₀ /D | 1.4430 |
| Flash point, Tag closed cup | 3°C |

The material undergoes reactions typical of secondary amines. It tends to absorb carbon dioxide from the atmosphere. Dehydrogenation with catalyst yields pyrrole, and oxidation with chromic acid gives gamma-aminobutyric acid. Addition products are formed with ethylene oxide, acrylonitrile, and hydrogen chloride and sodium cyanate (step-wise, to form N,N-tetramethylene urea). Condensation products are formed with formaldehyde and phenols. Pyrrolidine undergoes acylation; also alkylation with hydroxy compounds and chlorinated hydrocarbons.

Source: Product of E. I. du Pont de Nemours & Co. (Inc.), Electrochemicals Department, Field Research Section, Dept. CP, Wilmington 98, Del. . . or for more information check CP 4373 on handy form, pages 2 & 3.

Tricarboxylic Acid with Thioether Group Available for First Time

Carboxymethylmercaptosuccinic acid expected to play role in resins, plasticizers, surface active agents, other materials

USES: Special alkyd type resins can be prepared by reacting the acid with polyhydric alcohols — the thioether group modifying. In addition, the C-S-C linkage promotes color stability in alkyd resins. Castor-oil modified alkyd resins are interesting since the acid will react with the free hydroxyl groups of the castor oil in various manners. Trialkyl esters of the acid are good plasticizers for polyvinyl chloride, vinyl copolymers, and other elastomers. These esters are characterized by high solvating action, low volatility, and stabilizing action due to the thioether group.

Alkali and amine soaps of partial esters and amides of the acid show good properties as emulsifying, wetting and foaming agents, and detergents.

Straight trialkyl esters, as well as the lead, tin, and other salts of the acid and of its partial esters and amides are suggested for use in lubricating oils as antioxidants, extreme pressure additives, and similar materials.

Lead, barium, cadmium, tin, and similar salts of the acid show promise as stabilizers for vinyl resins, chlorinated rubber, and similar materials of this general nature.

Insecticidal and fungicidal properties of the acid and its derivatives extend potential application, particularly the copper and other heavy metal salts.

Many possible uses are foreseen for derivatives of the acid in the fields of rubber, chemicals, dyestuffs, and pharmaceuticals.

Features: Carboxymethylmercaptosuccinic acid is now available for the first time in pilot plant quantities.

Description: A tricarboxylic acid containing a thioether group, "Evanacid 3CS" is a white powder with melting range 136-138°C and minimum purity of 98% on dry basis. Molecular weight of this acid is 208.2. In general, 3CS reacts very much like a typical tricarboxylic acid. It forms salts, amides, esters, acid chlorides, and other derivatives in a manner similar to acids as citric and aconitic. In most cases the derivatives

or the mono- or di-substituted products can be synthesized to yield a series of interesting products. If esters are desired, they can be formed by reacting the acid with an aliphatic alcohol in the presence of a catalyst such as sulfuric acid or benzene sulfonic acid. An entraining agent may be

used, and standard procedures followed throughout the process.

The thioether linkage is responsible for many of the more important characteristics of 3CS and its derivatives, and contributes to their antioxidant and stabilizing properties. The linkage also effects volatility, as well as other physical characteristics, and can be considered equivalent to about two carbon atoms in this respect.

In general, the thioether group can be oxidized by various reagents, first to sulfoxide and then to the sulfone. C-S-C linkage is stable to all but the most drastic treatment.

Source: 3CS is a product of Evans Chemetics, Inc., Dept. CP, 250 East 43rd St., New York 17, N. Y. . . or for more information check CP 4374 on handy form, pages 2 and 3.

Tagged-carbon chemicals are announced

Nuclear Instrument & Chemical Corporation announces the availability of radioactive carbon compounds prepared in its new laboratory. Many of the tagged compounds will be produced by chemical synthesis, but present emphasis will be on biosynthesized chemicals (produced by nature in living plants and tissues). Glucose, sucrose and fructose are being made. (Nuclear Instrument & Chemical Corporation, 223-233 W. Erie St., Chicago 10, Ill.)

No plasticizer required for furan coating . . .

polymerization inhibitors evaporate with the solvent, allowing coating to set in from 2 to 4 hours

Uses: Corrosion-resistant coating for metals, wood, Transite, concrete, rubber, carbon, and glass.

Features: Flexibility without the use of plasticizer. This means embrittlement cannot occur as a result of plasticizer's leaching out.

Description: Resin possesses the resistance of furan materials to non-oxidizing acids, solvents, and alkalis, as well as resistance to oxidizing acids and bleaches. It is formulated with so many cross linkages that it remains flexible even though no plasticizer is incorporated. As furnished, it is partially polymerized. Gelation is prevented by inhibitors. These are volatile and evaporate with the solvents, so that after application the resin completes its polymerization in 2 to 4 hours.

Result is a finely fused film that is much less porous than plasticized thermoplastic coatings. Resin is classified as thermoplastic, but because unreacted linkages combine to complete its polymerization, the final film is a semi-thermo-set-thermoplastic coating. High solids content and relatively impermeable films result in requiring fewer coats for adequate protection. Three coats are usually puncture-proof to 30,000 volt sparks.

Lab reports show that coating has complete resistance (in immersion tests) to the following:

- 52% nitric acid
- 22% hydrochloric acid at 190°F
- 37% hydrochloric acid at 150°F
- glacial acetic acid at room temps
- 93% sulfuric acid at room temps
- brine at 212°F
- 50% caustic soda at 190°F.

In these corrosives, higher temperatures tend to toughen the coating and lower its resilience. It remains resistant to cracking, however, while actually increasing in resistance to wear. Various spray tests to hot and cold water, brine, and acids show that this furan coating stands up better than all formulations of polyvinyl chloride, chlorinated rubber, butadiene-styrene, and vinylidene chloride.

Resin is applied by brush just as it comes in the can. For spraying, it should be thinned with acetone. Brush application is recommended for best coverage and results.

To improve adherence, special primers should be used with this coating. Primers are made to meet specific requirements. However, no primer is needed on wood, carbon, glass, or Hycar rubber. Since solvents in both resin and primers are toxic and inflammable, standard precautions must be taken during application. All flammability and toxicity disappears from the finished cured coats.

Source: "B" resin is product of Carboline Company, Dept. CP, 7603 Forsyth Blvd., St. Louis 5, Mo. . . or for more information check CP 4375 on handy form, pages 2 and 3.

MAY, 1951



— BETTMANN ARCHIVE

try **METHOCEL** ... *a superior synthetic gum!*

Whenever your products or processes call for an emulsion stabilizer, try Methocel (Dow methylcellulose). Methocel has proved itself to be an ideal stabilizer and suspending agent in many applications. Among these are its use in resin emulsion paints, pharmaceutical preparations, cosmetics, polishes and in synthetic and natural latices for viscosity control.

Methocel has many advantages. It is soluble in cold water and yields colorless, tasteless, odorless solutions. Another important advantage lies in the fact that Methocel is a *synthetic* gum, closely controlled in manufacture and giving results and solutions that are constant, lot after lot.

A chemical of ever-increasing usefulness, Methocel also has applications as a thickener, film former, binder and suspending agent. In literally hundreds of different applications, Methocel has improved product quality, cut processing costs.

If you have not yet tried Methocel, send for your free, experimental sample of *powdered* Methocel. Write Dept. ME-35, stating potential application.



THE DOW CHEMICAL COMPANY

MIDLAND • MICHIGAN

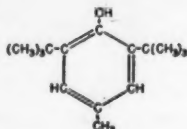
When inquiring check CP 4376 on handy form, pgs. 2-3

KOPPERS

DI-tert-BUTYL-para-CRESOL

... AN EFFECTIVE ANTIOXIDANT

● Koppers 2,6-Di-tert-butyl-para-cresol (DBPC) is a crystalline tri-alkylated phenol, which is insoluble in water and in aqueous alkaline solutions. DBPC is a hindered phenol and behaves in many respects like a phenolic ether. It undergoes few of the reactions typical of unhindered phenols, such as phenol and the cresols.



DBPC is an effective antioxidant for hydrocarbon materials such as petroleum oils and greases, and for vegetable oils and fats. Its antioxidant properties indicate its value to the rubber, soap, petroleum, insecticide, and oil and fat industries.

Bulletin No. C-9-115 describes in detail the properties, reactions and uses of DBPC. A copy of this bulletin will be sent upon request.

Though supplies are at present limited by the emergency demand, many known possibilities of DBPC make it a most interesting chemical for further study in your laboratories.



KOPPERS COMPANY, INC.
Chemical Division, Dept. CP-5
Koppers Building, Pittsburgh 19, Pa.

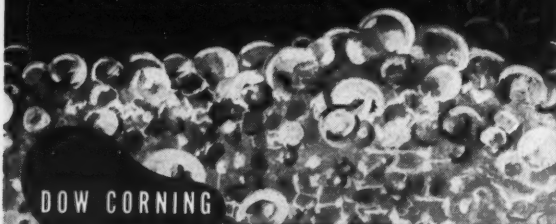
When inquiring check CP 4377 on handy form, pgs. 2-3

Wherever Foam's a problem . . .

DOW CORNING

ANTIFOAM A

EFFECTIVE IN FOAMERS RANGING
FROM ADHESIVES TO ZEINS
INCLUDING FOODS AND DRUGS



DOW CORNING
SILICONES

DOW CORNING CORPORATION
Midland, Michigan

Please send FREE SAMPLE to

Name _____ Title _____
Company _____
Street _____
City _____ Zone _____ State _____

When inquiring check CP 4378 on handy form, pgs. 2-3

Four Forms of Dihydroxy Diphenyl Sulfone Are Being Made Available

Two are mixed isomers supplied commercially,
two are purified isomers offered experimentally

USES: Solutions of alkali and alkaline earth salts of dihydroxy diphenyl sulfone may find application due to their buffering actions. Product itself is useful as an electroplating bath additive, can be employed in adhesive formulations, and finds use as a stabilizer for celulosic materials. Product and its esters have found use as biocides.

Phenolic resins can be prepared from the product, and when suitably solubilized and condensed, indicate use as tanning agents, textile auxiliaries, dispersants, fungicides, and bleaching agents.

May be useful as an intermediate in organic synthesis, particularly in those applications in which a phenolic compound stable to the oxidizing action of light and air would be valuable.

Features: Dihydroxy diphenyl sulfone is available in four different forms: two grades of mixed isomers in commercial quantities, and two purified isomers each in experimental quantities.

Description: Mixtures consist of the 4,4' and 2,4' isomers, and are designated as Dihydroxy Diphenyl Sulfone NT and Dihydroxy Diphenyl Crude. The former is the purer of the two mixtures and is essentially a white, crystalline, free flowing powder having no odor. The latter is a reddish gray, free flowing powder with a slight odor of phenol.

Purified isomers are 4,4'-Dihydroxy Diphenyl Sulfone and 2,4'-Dihydroxy Diphenyl Sulfone. Former is a white crystalline material, and the latter is a light brown crystalline materials.

Empirical formula for dihydroxy diphenyl sulfone (sulfonol bis-phenol) is $C_{12}H_{10}O_4S$ and molecular weight is 250.3. Some of the physical properties of the products available here are tabulated below:

| | NT | CRUDE | 4,4' ISOMER | 2,4' ISOMER |
|------------------------------|--|----------------------|----------------|----------------|
| Assay | 4,4' isomer 64-72% 2,4' isomer 36-28% | 95% mixed isomers | 99-100% | 98-99% |
| Phenol | <0.05% | 0.15% | <0.05% | <0.05% |
| Melting Point | 175-235°C | — | 236-245°C | 176-181°C |
| Crystallizing Point (min) | 220°C | — | 242°C | 176°C |
| Bulk Density | 35 lb/cu ft | — | 25 lb/cu ft | 30 lb/cu ft |
| Mineral Acidity | <0.05% | 0.1% | <0.05% | <0.05% |

Solubility is exhibited in water, benzene, ethanol, acetic acid, and acetone, with a progressive increase in solubility in the order of materials mentioned. Greater solubility is shown at the boiling point than at 25°C.

Reactions of dihydroxy diphenyl sulfone are those of phenol modified by the presence of the sulfonol group. The material can be solubilized by sulfonation at room temperature; more stringent treatment with oleum or hot H_2SO_4 breaks the molecule, forming phenol sulfonic acids. The dinitro compound can be readily formed by reaction of the sulfone with HNO_3 . Attempts to halogenate it result in poor yields and mixtures of products.

Esters of the sulfone are reportedly easily prepared. The sulfone is stable toward reducing agents. Alkyl ethers are obtained by conventional methods.

Source: Monsanto Chemical Company, Merrimac Div., Dept. CP, Everett, Mass., is the maker . . . or for more information check CP 4379 on handy form, pages 2 and 3.

Basic-furnace ramming material saves application time and burning-in fuel . . .

periclase mix contains 95-96% MgO ; doesn't require addition of fluxing agents

Uses: Ramming material for construction of basic open hearth and electric furnace bottoms. Satisfactory for bottoms, banks, and hot and cold patches.

Features: Material is a complete mix in itself and does not require addition of fluxing agents. It tests 95 to 96% magnesium oxide and is comparatively free of fluxing agents which cause other ramming mixes to develop liquids at high temperatures, lose volume stability, and limit refractoriness under load and shrink.

Several years of testing by some of the largest steel companies have shown the material to provide the following benefits: 1) shorter installation time, resulting in less labor cost and less down-time; 2) less damage to other furnace refractories during burning-in; 3) less fuel for burning-in; 4) time saved by not having to chill furnaces and fill cracks; 5) bottoms and banks show excellent resistance to erosion from iron oxide and basic slag; 6) less maintenance materials needed.

Description: Permanente 165 is made from periclase, derived by calcining high-purity magnesium hydroxide.

After driving off the combined water, high temperatures cause the magnesium oxide to form large crystals of periclase so that porosity of resultant grain is lowered. These large crystals form a dense, hard refractory structure that resists basic chemical attack. It is important to note that, even though this material has a high MgO content, the grain can be made in a commercial rotary kiln, and does not require fusion in electric furnaces at very high temperatures.

Patented process makes it possible to form a well-shrunk, low-porosity, true periclase grain at rotary kiln temperatures. The periclase does not possess a matrix-dominated structure as do other periclase refractories with lower MgO content and a relatively high percentage of fluxing agents. Crystals of periclase are actually in contact with each other. The periclase is in continuous phase and the impurities in dispersed phase.

Bond starts to form at 1450°F, at points of contact of periclase grains, under influence of a catalyst. When entire bottom mass reaches 1450°F, bond will have developed throughout.

Source: Produced by Kaiser Aluminum & Chemical Corporation, Chemical Division, Dept. CP, Oakland, Calif. . . . or for more information check CP 4380 on handy form, pages 2 and 3.

Process improves resistance of glass fiber polyester laminate to moisture . . .

vinyl chloro silane minimizes loss in flexural strength when in water or high humidities

Although glass fiber polyester laminates were used in place of aluminum and lightweight steel for many applications in World War II, they were generally limited to applications where there would be no or little exposure to moisture or high humidities. They would lose about 50% of their flexural strength upon such exposure. The weakness that caused this was believed to be the inability to obtain a good water-resistant bond between the glass fibers and the plastics.

A new method has been developed for making these laminates that greatly reduces loss of flexural strength under wetting or high-humidity conditions. In one known case the reduction in flexural strength was about 10% after boiling the laminate in water for 5 hours.

Briefly, the process consists of applying a size of vinyl chloro silane to the glass fiber, followed by an after-wash of water. The silane is applied either in vapor phase or by immersion in an organic solvent solution of the compound, with subsequent drying. Application of some beta-chloro allyl alcohol in conjunction with the treatment gives improved results.

It is believed that the chlorine of the silane compound is hydrolyzed off in such a manner that the silicone molecule becomes tied directly to the glass while the vinyl grouping reacts and participates in polymerization of the resin, so that an actual chemical bond is formed between glass and resin.

According to tests, any polyester resin may be used, with good results. There is nothing particularly critical in the process. It has been carried out repeatedly at different laboratories. The basic plan which led to development was conceived by the Materials Laboratory, Engineering Division, Air Material Command, Dayton, Ohio.

(Summary of address given before Society of The Plastics Industry Conference by L. L. Yaeger of Bjorksten Research Laboratories, Inc.)

MAY, 1951

aaa
(ALCOA ACTIVATED ALUMINA)

dries LPG
(LIQUEFIED PETROLEUM GAS)

ALCOA Activated Alumina has had a long and successful history of dehydration of liquids and gases. It has been particularly effective in the drying of propane and butane, the gases so important to the production of the new motor fuel, Liquefied Petroleum Gas.

Propane and butane, passed through beds of ALCOA Activated Alumina, are freed of their highly dispersed and dissolved liquid water, eliminating the problem of moisture in pipe lines and the hazards of frozen valves. Since ALCOA Activated Alumina is one of the few drying agents that will not shatter on contact with water, it is ideal for this operation. Moreover, it will not swell, soften or disintegrate . . . has high resistance to crushing, shock and abrasion . . . is non-toxic . . . non-corrosive . . . practically iron-free.

Years of use have proved ALCOA Activated Alumina to be one of the most effective and efficient desiccants available. Dew points as low as minus 100° F.—and even lower—have been obtained and under normal circumstances it can be used for an almost indefinite number of drying cycles.

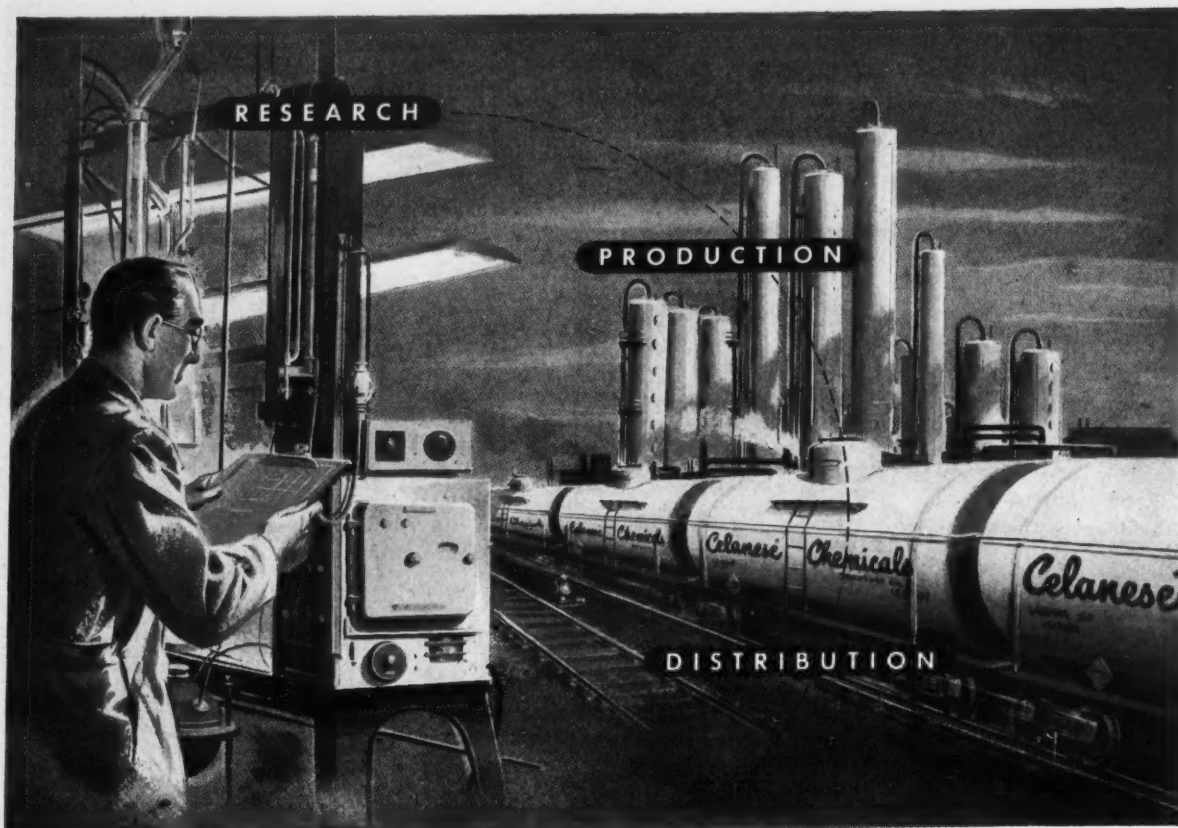
If dehydration is a problem in your process, you will want to know more about this uniformly pure aluminum oxide. We'll gladly send you complete information. Write to: ALUMINUM COMPANY OF AMERICA, CHEMICALS DIVISION, 606E Gulf Building, Pittsburgh 19, Pennsylvania.

Alcoa Chemicals

ALCOA
ALUMINAS and FLUORIDES

ACTIVATED ALUMINAS • CALCINED ALUMINAS • HYDRATED ALUMINAS • TABULAR ALUMINAS • LOW SODA ALUMINAS • ALUMINUM FLUORIDE • SODIUM FLUORIDE • SODIUM ACID FLUORIDE • FLUOBORIC ACID • CRYOLITE • GALLIUM

When inquiring check CP 4381 on handy form, pgs. 2-3



Chemical Formula FOR PEAK PRODUCTION

Round-the-clock plant operation is back in style as American industry, called upon for greater output than ever before, is pushing production to new highs.

To meet the steadily increasing defense demands of industry for organic chemicals, the Celanese plant at Bishop, Texas is in continuous operation. Celanese, a major producer of Formaldehyde, Acetic Acid, Acetone, Methanol and other organic chemicals, is shipping volume quantities of these organics to the plastics, protective coatings, textile, paint and other vital industries.

Celanese chemical service to industry includes: the most up-to-date production methods . . . a nation-wide

distribution system . . . and a far-reaching program of research and development backed by a generation of experience in petroleum chemistry.

Celanese Corporation of America, Chemical Division,
Dept. 505-E, 180 Madison Avenue, New York 16, N. Y.



*Reg. U.S. Pat. Off.

**PARAFORMALDEHYDE • FORMALDEHYDE • ACETALDEHYDE • ACETIC ACID • ACETONE
BUTYL ALCOHOLS • METHANOL • n-PROPANOL • METHYLAL • TRICRESYL PHOSPHATES
BUTYLENE GLYCOLS • DI-PROPYLENE GLYCOL • PROPYLENE GLYCOL • PROPYLENE OXIDE**

When inquiring check CP 4382 on handy form, pgs. 2-3

MATERIALS

**Contact with crudes, salt water
for 5 months leaves steel tube
without sign of corrosion . . .**

section that wasn't coated with resin-base system corroded to depth of $\frac{1}{4}$ " in same period

To illustrate the degree to which corrosive action on 4" steel tubing was inhibited in an oil well application, the following example is cited. A 4,500' string of new tubing put into a well had a 6-coat system of Vinylite-based resins applied to 100 feet of its length, and the remaining length was left uncoated. After five months exposure to a daily flow of 100 barrels of oil and 5,000 barrels of salt water with high iodine content, tubing was withdrawn and samples of coated and uncoated sections cut out for inspection.

Uncoated section (illustrated at left) was corroded as deeply as $\frac{1}{4}$ ". Coated section (right) showed no measurable corrosion or wear.



For application, a special nozzle was used first to sandblast the interior of the pipe down to grey steel, then a special 360° spray was used to apply a primer coat followed by five alternate red and black finish coats. Coverage is about 300 sq ft/gal and the 6-coat system results in a coating thickness of about 0.005". Coatings were applied by Liquid Plastics Company of California; Vinylite resins are a product of Bakelite Company, a division of Union Carbide and Carbon Corporation.

Coated and uncoated sections of oil well tubing, showing corrosion protection offered after 5 months of handling crudes, salt water

(Formulator of coatings in this application was Plastic Coating Corporation, Dept. CP, P.O. Box 13127, Houston 19, Texas.)

**100% rubber-based coating on
metal, masonry and wood
bars corrosives, moisture . . .**

brushes or sprays over all primers and paints and dries in 4 hr; films are tough and elastic

Uses: Coating for metals, masonry, and wood (indoors or outdoors), offering protection against corrosives, moisture, oils, and mechanical wear. Specific applications include structural steel, process equipment, bottling equipment, chemical tanks, concrete floors, walls, ceilings, basements, etc.

Although resistant to splashes and fumes of corrosives, coating is not intended for constant immersion in corrosive liquids.

Features: Applies by brushing or spraying over any conventional primer or paint and dries in less than four hours. Has no unpleasant odor; thins with turpentine. Films are elastic and tough.

Description: Series "F" Coatings (100% plastic
CHEMICAL PROCESSING

U.S.I. CHEMICAL NEWS

May ★ A Monthly Series for Chemists and Executives of the Solvents and Chemical Consuming Industries ★ 1951

New Combination Combats Viruses, Bacteria, Fungi

A new combination of iodine and polyvinyl pyrrolidone has successfully combated viruses, bacteria, and fungi in over 300 patients, according to the report of a Philadelphia physician. The polyvinyl pyrrolidone detoxifies iodine, so that it can even be taken internally, without destroying its efficiency as a virucide or germicide, the doctor states. He reportedly found that the combination could be administered topically, orally or intravenously without causing burns or other toxic effects.

According to the physician, the combination is odorless, the vapor pressure of iodine is nullified, and it no longer sublimates. Although no color change can be detected when starch is added to the solution, the iodine can be determined stoichiometrically by titration with sodium thiosulfate.

Over a hundred patients with skin infections who failed to respond to conventional treatment were reported successfully treated with PVP-iodine. Other patients with infections like colds and gripe are said to have improved rapidly after intravenous treatment with the new combination.

New Odor Measurement By Surface Tension Change

Results of recent tests indicate that an instrument might be developed which could classify and measure air contamination at concentrations detected by the nose as strong odors. The experiments are said to have shown that the surface tension of liquid drops of distilled water, mineral oil, and water-stabilized mercury may undergo considerable change because of air contamination resulting from nearby solid odorous material. According to test reports, the surface tension change in a particular liquid follows a pattern characteristic of the contaminant. The same contaminant is said to have produced different changes in surface tension in each of the three liquids tested.

Chemically Treated Paper Prevents Metal Corrosion

A new chemically treated paper is said to be a revolutionary approach to the protection of non-ferrous metals and steel from corrosion. The protective coating, dicyclohexyl ammonium nitrite, is contained in the paper, not applied to the article to be protected. The chemical is described as a white, odorless powder, slightly volatile, giving off a "mothball effect" claimed to prevent entry of moisture and air and to be capable of protecting metals for a very long period of time. The new treated paper is expected to supplant greases used at present to protect military and industrial metal articles.

Vitamin B₁₂ Is Found To Improve Ration Containing Fish Meal and Antibiotics

Increased Chick-Growth Results from Addition of Vitamin B₁₂ To Rations Containing Fish Meal or Antibiotics or Both

Recent tests conducted at a leading eastern university indicated that the addition of vitamin B₁₂ to a ration containing antibiotic, fish meal, or a combination of both gave a significant increase in chick growth. The basal ration used in these tests was an all-plant-protein formulation which was considered to be typical of many commercial feeds now being used in the field. (See figure 1.)

Crystalline Vitamin A Synthesized Commercially

Crystalline vitamin A is reported in production now on a commercial scale and is said to be available in a stabilized, high potency, dry form and as a liquid derivative. Commercial synthesis of this vitamin had been too difficult previous to this development; the crystals were too sensitive to air and humidity for practical use. The new process is claimed to stabilize crystalline vitamin A by coating the crystals with gelatin. Stability achieved is said to be so great that the vitamin shows no substantial deterioration when exposed to air at high temperatures for 1,200 hours—the approximate equivalent of three years' normal storage.

The new dry form reportedly will make it possible to incorporate vitamin A in multivitamin pellets and should simplify the fortification of dry goods with vitamin A, which was formerly impractical. Three forms of the crystalline vitamin A will be marketed, including some special forms developed for fortifying oleomargarine.

Bacteria Work in Reverse, Make Cellulose from Sugar

A bacterial process for producing cellulose from cane sugar is reported in operation in England. This is the reverse of the normal process in which bacteria make sugar from cellulose. If this bacterial action can be carried out on the scale of penicillin production from mold, there would presumably be a big yield of cellulose every few days. The English researcher also is said to have bacteria working on starch and sugar products to make dextrose.

New-Type Synthetic Rubber

A new-type synthetic rubber will permit manufacture of high-quality tires with only 75 or 80 per cent of the rubber now being used in conventional cold-rubber GR-S compounds, according to the government. The new development involves the addition of readily available oils to cold rubber GR-S.

The antibiotics used in the tests were bacitracin, terramycin, penicillin, streptomycin, and aureomycin. Each antibiotic was added to the ration at levels of approximately 9 grams per ton. When vitamin B₁₂ was added to the ration it was added to the extent of 12 milligrams per ton in the form of the crystalline material. Any B₁₂ present in natural feed ingredients increased the amount present in the ration. When used in the formula, 2.5 per cent menhaden fish meal replaced 2.5 per cent high-protein soybean oil meal. Results are shown in Figure 2.

It can be seen that the addition of 12 milligrams per ton of B₁₂ greatly improved the basal ration. Fish meal at the 2.5 per cent level improved the basal ration but to a lesser extent than the B₁₂. When both B₁₂ and fish meal were added at the levels mentioned above, both materials gave an additive response which was greater than that obtained when either was used alone.

The use of vitamin B₁₂ along with antibiotic also gave results

MORE

BASAL RATION

| Ingredients | Amounts |
|------------------------------------|-------------------|
| Corn Meal | 46.5 lbs. |
| Standard Middlings | 15.0 lbs. |
| Soybean Oil Meal (50%) | 25.0 lbs. |
| Alfalfa Meal | 2.5 lbs. |
| Butyl Solubles (250) | 2.0 lbs. |
| Limestone | 1.0 lbs. |
| Bone Meal | 2.5 lbs. |
| Salt | 0.5 lbs. |
| Total | 95.0 lbs. |
| Manganese Sulfate | 11.35 gm. |
| A & D Oil (2000A-400D) | 10.7 gm. |
| Choline Chloride (25%) | 128.0 gm. |
| Niacin | 900 mg. |
| Riboflavin Supplement (8 mg./gram) | 16.2 gm. |
| Total | 167.15 gm. |

Figure 1

May *

U.S.I. CHEMICAL NEWS

★ 1951

CONTINUED

Vitamin B₁₂
In Feeds

superior to those obtained when any antibiotic was used by itself. The importance of adequate levels of vitamin B₁₂ in a feed can be seen by noting the weight averages of each column in Figure 2. The addition of B₁₂ to the basal ration with or without antibiotic (column II) gave a greater general response than supplementation with 2.5% fish meal (column III).

There has been considerable controversy regarding the level of vitamin B₁₂ necessary in poultry feeds. The chicks used in this experiment were "crosses" from normal non-depleted stock and were obtained from three commercial sources. The birds responded to supplementation with B₁₂ at a level of 12 milligrams per ton of finished feed. It is very probable that some chicks require lower levels of vitamin B₁₂ than others, depending upon their genetic and nutritional background. The information presented indicated that it would be to the advantage of feed manufacturers to include sufficient amounts of vitamin B₁₂ to insure consistently good results under varying field conditions.

Hormone Grows Hair
On Bald Heads

Hair an inch long has grown on the heads of two bald men in five weeks following injections of a hormone isolated from hog pituitaries, according to a laboratory research director. Comparable results were reported with about 25 other men whose scalps were tested with a cream containing the hormone. Included in these cases, it is claimed, are some men 55 to 60 years old who have been bald for 25 or 30 years. New hair that has come in is said to be the same color as that which grew before the subject became bald.

The research director believes the hormone acts by regenerating atrophied hair follicles. He pointed out that non-toxic effects have been observed on humans or animals given the new hormones by injection or inunction. Administered parenterally to men it grows hair only on the head, according to the report.

Average Eight-Week Weights by Lots (16 birds) Where Vitamin B₁₂,
Fish Meal, and Antibiotics Are Experimental Variables

| | | | | | | |
|----------------------------------|----------|------|------|------|--------------------|------|
| Soybean Oil Meal % | 5 | 5 | 2.5 | 2.5 | Ave. by Rows | |
| Fish Meal % | 0 | 0 | 2.5 | 2.5 | | |
| Vitamin B ₁₂ Mg./100# | 0 | .6 | 0 | .6 | | |
| Column | I | II | III | IV | | |
| Antibiotic | Mg./100# | Gm. | Gm. | Gm. | Gm. | Gm. |
| None | 0 | 935 | 1005 | 994 | 1082 | 1004 |
| Aureomycin | 423.5 | 1032 | 1113 | 1096 | 1118 | 1090 |
| Streptomycin | 454 | 972 | 1034 | 1014 | 1120 | 1035 |
| Penicillin | 454 | 1133 | 1161 | 1145 | 1124 | 1141 |
| Terramycin | 454 | 1017 | 1091 | 1075 | 1113 | 1074 |
| Bacitracin | 313 | 1054 | 1061 | 1070 | 1109 | 1074 |
| Ave. by Columns | | 1024 | 1078 | 1066 | 1111 | |

Figure 2

TECHNICAL DEVELOPMENTS

Information about manufacturers of these items may be obtained by writing U.S.I.

For control of biological fouling of condensers and cooling towers, a new reagent now being test-marketed, is said to be effective in concentrations of 2 parts per million. Other advantages claimed are ease of handling, freedom from skin irritation, ready miscibility with water. (No. 679)

A new-type steel drum, described as taller and slimmer than present standard type with a "necked-in" head which permits stacking drums directly on top of each other, is expected to reduce transportation costs, save space, and speed handling. (No. 680)

For instantaneous detection of fire, a new system reportedly does not depend on heat or smoke as indicators, need not be directly exposed to fire, can detect smallest of fire yet not be affected by sunlight or artificial illumination. (No. 681)

Sugars labeled with radioactive carbon atoms at specific positions within the molecule are the object of a new project. They can be used to make labeled samples of other carbohydrates such as starch or cellulose. (No. 682)

A new ultrafinely divided adsorptive powder (a hydrated aluminum magnesium silicate), described as low-cost, dry, free-flowing, chemically inert, and essentially neutral, is expected to find use as a filler, flattener, conditioner, coater, polisher, strengthener, and bodying agent. (No. 683)

A new drug for treating shock has reportedly been found in clinical trial to prevent fatalities that might otherwise occur from lowered blood pressure. (No. 684)

New serpentine flexible electric heating units reportedly can be applied to pipes, valves, cylinders, and containers carrying viscous or free-flowing fluids or gases, and can operate at temperatures approaching 1,000°F. for long periods. (No. 685)

For brominating olefins in the allyl position, for oxidizing secondary alcohols to ketones with specificity, and for adding HOBr or Br₂ to double bonds depending on conditions employed, n-bromoacetamide is now available commercially. (No. 686)

A new labeling machine for 5-gallon steel drums to eliminate costly hand labeling is said to do both spot and wrap-around labeling at 18 drums per minute. (No. 687)

An organic nonionic thickening agent for cream and liquid shampoos tends to reduce foam loss than other agents, it is claimed. (No. 688)

PRODUCTS OF U. S. I.

ALCOHOLS

Amyl Alcohol (Isoamyl Alcohol)
Butanol (Normal-Butyl Alcohol)
Fusel Oil—Refined
Propanol (Normal-Propyl Alcohol)
Ethanol (Ethyl Alcohol)
Specially Denatured—all regular and anhydrous formulas
Completely Denatured—all regular and anhydrous formulas
Pure—190 proof U.S.P., Absolute—200 Proof
Solox®—proprietary solvent—regular and anhydrous

ANTI-FREEZE

Super Pyro® Anti-Freeze
U.S.I. Permanent Anti-Freeze

ANSOLS

Ansol® M
Ansol® PR

ACETIC ESTERS

Amyl Acetate—Commercial and High Test

Butyl Acetate
Ethyl Acetate—all grades
Normal-Propyl Acetate

OXALIC ESTERS

Dibutyl Oxalate
Diethyl Oxalate

PHTHALIC ESTERS

Diamyl Phthalate
Dibutyl Phthalate
Diethyl Phthalate

OTHER ESTERS

Diatol®
Diethyl Carbonate
Ethyl Chloroformate

INTERMEDIATES

Acetoacetanilide
Acetoacet-ortho-chloroanilide
Acetoacet-ortho-toluidide
Acetoacet-para-chloroanilide

Ethyl Acetoacetate
Ethyl Benzoylacetate
Ethyl Sodium Oxalacetate

ETHERS

Ethyl Ether, U.S.P.
Ethyl Ether, Absolute—A.C.S.

ACETONE—A.C.S.

FEED PRODUCTS

Curbay B-G®
DL-Methionine
Riboflavin Concentrates
Special Liquid Curbay®
U.S.I. Vitamin B₁₂ and Antibiotic Feed Supplements
Vacatone® 40

RESINS (Synthetic and Natural)

Arochem®—modified types
Arofen®—pure phenolics
Aroflat®—for special flat finishes

*Reg. U.S. Pat. Off.

Aroplaz®—alkyds and allied materials
Congo Gums—raw, fused & esterified
Ester Gums—all types
Natural Resins—all standard grades

INSECTICIDE MATERIALS

CPR Concentrates: Liquid & Dust
Piperonyl Butoxide
Piperonyl Cyclonene
Pyrethrum Concentrates: Liquid & Dust
Pyrethrum Products: Liquid & Dust
Rotonene Products: Liquid & Dust

INSECTIFUGE MATERIALS

Indalone®
Triple-Mix Repellents

OTHER PRODUCTS

Collodions
Ethylene
Nitrocellulose Solutions
PiB®—Liquid Insulation
Urethan, U.S.P.
Special Chemicals and Solvents

U.S.I. INDUSTRIAL CHEMICALS, INC.

60 EAST 42ND ST., NEW YORK 17, N.Y.



BRANCHES IN ALL PRINCIPAL CITIES

MATERIALS

rubber base) can be applied to surfaces; better results are obtained over primers.

Surfaces of concrete, plaster, block, cast stone, etc., should be wax, pitch, tar and asphalt. No primer is needed.

For application over old paint, be sandpapered to remove.

For 1-coat jobs over existing directly from can as received the first coat is thinned. Twenty-four hours is standard. Coverage on metal is 400-200-300 sq ft/gal/coat.

Series "F" Coatings are available in fumes, caustic solutions. Standardly available are: Green F-55, Light Gray F-55.

Source: Announced by CP, 220 East 42nd St., New York. For more information check CP 2 and 3.

Two layers of insulation are better than one

molded-type, applied in sufficient, safer where fire.

Tests and applications show that two layers are better than one single layer. The two layers are more hazardous is present assured. Double layer insulation joints which largely prevent that involve hazards.

Expansion and contraction of joint often causes joints to open. Enough cracks to materially reduce insulation. Furthermore, the joint area may require repair or replacement.

Open joints are particularly hazardous, such as a refinery adjacent pipeline or vessel containing flammable liquid.

In a southwestern refinery, an open joint of the insulation soaked materials left temporary another instance a canvas line in a large central storage tank was ignited by heat.

When installing insulation, a layer has been wired on, so that a block or section underneath should open, outer layer should be applied. In this way, there is no pipe equipment surface to the Manufacturers Association.

For more information, left, specify CP 4384. For more information request blank copy.

MAY, 1951

be applied directly to clean, dry metal surfaces. Results are obtained, however, when used

te, plaster, stucco, transite, brick, cinder etc., should be free from all oil, grease, and asphalt, and should be relatively dry.

er old paints and wood, surfaces should remove dirt, grease, and loose paint.

ver existing finishes, coating is applied as received. In multiple-coat application, thinned with turpentine and successive directly from the can without thinning. is standard drying time between coats. is 400-500 sq ft/gal/coat, on masonry /coat.

gs are unaffected by dilute acid spills solutions, and mold or fungus. Colors are: Black F-18, Tile Red F-25, Tile Gray F-75, and Medium Gray F-76.

anced by David E. Long Corp., Dept. d St., New York 17, N. Y. ... or for check CP 4383 on handy form, pages

Insulation

applied in double layer, is more effective where fire hazards exist

ions show that two layers of insulation the single layer of equivalent thickness. are more efficient and where a fire assure a greater degree of safety. ulation permits the use of staggered prevent development of conditions ds.

ontraction of high temperature equipments joints between insulation blocks or Enough heat can escape through these inore reduce the effectiveness of the inore, the canvas or cement finish area may become sufficiently scorched r replacement.

particularly dangerous in a fire hazard refinery where a leak or break in an or vessel would allow escape of an in-

refinery enough heat escaped from the insulation of a pipeline to ignite oil-left temporarily on the line. In an canvas jacket of a high pressure steam ntral station power plant on the east y heat escaping from open joints.

insulation in two layers, after first ed on, sections or blocks in the second so that each joint is centered over a nderneath. If joints in the inner layer or layer acts as an effective heat seal. is no path of heat to escape from the to the outside. (Magnesia Insulation ociation, Washington 4, D. C.)

ormation on product at P 4384 ... see information blank between pages 2-3.

ARMOUR

Chemical Division

Durable Water Repellents from Fatty Amides

"Armide" is the Armour trade-name given to the general class of long chain fatty amides derived from fatty acids. These high-molecular weight amides are high-melting, wax-like materials. The commercially pure amides are water-insoluble and neutral.

One amide in this series, Armide HT, has superior properties for water repellency applications when compared with paraffin and natural waxes.

The excellent water repellent properties of Armide HT derivatives are due primarily to the combination of the amide grouping with a long, saturated straight chain. Durability of the water repellent effect results from the relative insolubility of the derivatives under dry-cleaning operating conditions, and from their high-melting points and poor emulsification characteristics with the soaps and detergents used in laundering.

Armide HT is composed of 25% hexadecane amide, 70% octadecane amide and 5% octadecene amide, is off-white in color and has a melting point of approximately 98° C.

In contrast with the chemical inertness of the hydrocarbons, Armide HT is reactive chemically. Advantage has been taken of its reactivity with formaldehyde in particular to prepare thermally unstable quaternary ammonium salts. These are applied to fabrics from aqueous solution and decomposed under heat to leave an insoluble, durable water repellent



residue within the fabric. Reactivity with formaldehyde also permits compounding of stearamide or its derivatives with thermosetting resins to produce durable water repellent effects. Many of these thermally unstable compounds, however, are covered by patents and those patents should be consulted.

Armide HT is packaged in flake form in 100 lb. multi-wall paper bags. For samples or additional information on the Armides, mail the coupon below.

Low-Temperature Solvent Crystallized Oleic Acid

Another new product has been added to Armour's line of fatty acids. Already the manufacturer of the most complete line of high-purity distilled fatty acids that can be found anywhere, the Armour Chemical Division now offers low-temperature solvent crystallized oleic acid.

This exclusive process offers users of oleic acid a product that has advantages not found in ordinary distilled or pressed products. The extremely low temperatures employed guarantee a substantially lower saturated acid content than conventional types of oleic acid. In addition, solvent crystallized oleic acids are ester-free materials since the solvent used is not reactive with fatty acids. This new product is characterized by bland odor and has excellent heat stability.

Armour's low-titer White Oleic Acid meets U. S. Pharmacopeia specifications and is recommended for those uses that require a light color as well as a low titer. For applications that require a low titer but not a very light color, low-titer Distilled Red Oil is recommended.

White Oleic Acid (Low Titer)

| | Min. | Max. |
|-------------------------------|------|----------|
| Titer | — | 5°C |
| Iodine No. (Wijs) | 90 | 95 |
| Acid Value | 195 | 201 |
| Saponification Value | 195 | 201 |
| Unsaponifiable | — | 2% |
| Color (Lovibond 5 1/4" tubes) | — | 1.5R-15Y |

Distilled Red Oil (Low Titer)

| | Min. | Max. |
|-------------------------------|------|----------|
| Titer | — | 5°C |
| Iodine No. (Wijs) | 90 | 95 |
| Acid Value | 193 | 200 |
| Saponification Value | 193 | 200 |
| Unsaponifiable | — | 3% |
| Color (Lovibond 1 1/4" tubes) | — | 8.0R-30Y |

Armour's Oleic Acids are available in 55 gallon drums and aluminum tank cars. Write today for samples and prices.

Fatty Acids
Long-Chain Fatty Acid Derivatives
Industrial Oils

Lard Oil Lubricants

Lard oil possesses the property of "oiliness" so essential in the lubrication field. In addition, lard oils are readily saponified when treated with alkalies and possess non-drying qualities.

Where a high grade lubricant is required, as in drawing copper and brass tubing, Extra Winter Strained Lard Oil is recommended. Its low free fatty acid content makes it ideally suited as a base for such products.

Extra Winter Strained Lard Oil is only one in a complete range of lard oils offered to the lubrication field by the Armour Chemical Division. Write today for your free copy of a chart showing "Specifications for Armour Industrial Oils."

Reading for Research Chemists

To help research chemists, the Armour Chemical Division continually prepares informative literature on chemicals derived from fats. The two technical bulletins described below are available free of charge.

For research chemists interested in fatty amines (organic bases or alkalies made from fatty acids), Armour has prepared a detailed 24-page bulletin entitled, "The Chemistry of Fatty Amines."

"The Chemistry of Fatty Acids" is the title of another technical bulletin offered by the Armour Chemical Division. It describes fatty acids, their composition, reactions, and derivatives.

Either or both of these booklets are yours for the asking. Use the coupon below to make your request.

Mail this Coupon

Please send additional information on

•
•

Name.....Title.....

Firm.....

Address.....

City.....Zone.....State.....

ARMOUR Chemical Division

Armour and Company
1351 W. 31st St., Chicago 9, Ill.

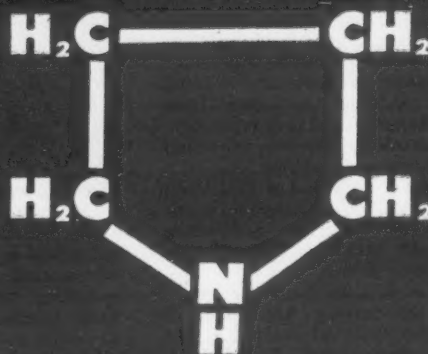
When inquiring check CP 4385 on handy form, pgs. 2-3

AVAILABLE IN DEVELOPMENT QUANTITIES FROM DU PONT

PYRROLIDINE

PHYSICAL PROPERTIES

| | |
|---|--|
| Appearance | Colorless, mobile liquid |
| Odor | Penetrating, amine-like |
| Molecular Weight | 71.12 |
| Freezing Point (Tech. Grade) | -63°C. |
| Boiling Point | 86-87°C. |
| Specific Gravity, 20/4 | 0.8618 |
| Index of Refraction, N ₂₀ /D | 1.4430 |
| Flash Point (Tag Closed Cup) | 3°C. |
| Solubility | Miscible with water and most organic solvents |
| In water forms base with dissociation constant of 1.3×10^{-3} . | |



This cyclic secondary amine is now being produced synthetically and is potentially available in commercial quantities. A wide variety of unusual compounds can be formed by reactions involving addition, condensation, acylation, and alkylation. Outstanding chemical properties include the following:

Moderately strong organic base. Solubilizer for acidic materials.

Functions as a catalyst and reaction medium for certain organic reactions.

A REQUEST on your company letterhead will bring technical bulletins and price information. Just write to E. I. du Pont de Nemours & Co. (Inc.), Electrochemicals Department, Field Research Section, Wilmington 98, Delaware.

Highly reactive, versatile chemical intermediate which may afford a practical way to make profitable products. For example:

- With carbon disulfide, yields rubber accelerators similar to those obtained from piperidine.
- With alkyl halides, gives N-alkyl pyrrolidines which can be converted to quaternary bases of possible use as sterilizers and surfactants.
- Useful for introducing the pyrrolidyl ring, a physiologically active nucleus found in many natural products such as alkaloids.
- With ethylene oxide, gives an alkanolamine, N-hydroxyethyl pyrrolidine.

**DU PONT
ELECTROCHEMICALS**



Better Things for Better Living... through Chemistry

When inquiring check CP 4386 on handy form, pgs. 2-3

MATERIALS

Effective gasketing to 10⁻⁷ mm Hg . . .

soft synthetic elastomer has low outgassing pressure; is resistant to abrasion

Uses: Gasketing material for high vacuum work. Can be used in most systems, down to 10⁻⁷ mm Hg.

Features: Reported to have very low vapor pressure. Under standard test conditions, material has been found to have a lower outgassing pressure than any other material commonly available for this purpose, states maker.

Description: Myvaseal is a synthetic elastomer which is quite soft and has high abrasion resistance. It will be available in molded, extruded or sheet form to meet individual specifications.

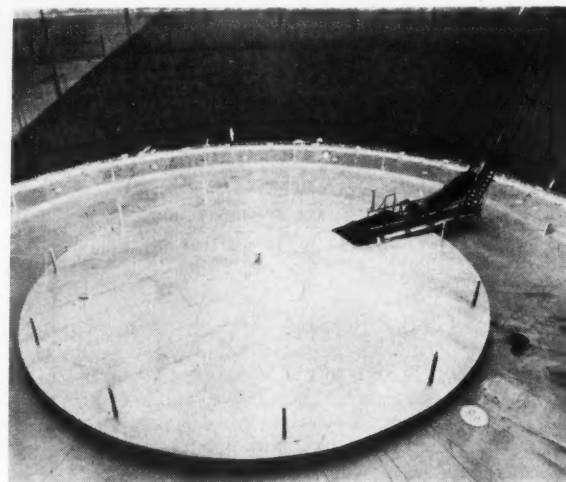
The material is being used in parts of electron tube exhaust machines. Here, it has enabled higher vacuum with less pumping. TV picture tube pumping systems and rotary exhaust systems are also being equipped with material.

Source: Vacuum Equipment Department, Distillation Products Industries, Dept. CP, 727 Ridge Road West, Rochester 3, N. Y. . . . or for more information check CP 4387 on handy form, pages 2 and 3.

Anti-corrosive flexible coatings withstand hard service on oil tanks . . .

five successive coatings give final finish with approximate thickness of .0045 inch

Protective coatings, developed after several years of listing, are now being used on storage tanks of a major oil company and are showing exceptional resistance to corrosion and breaks in the film. These properties are imparted by the use of Vinylite resins in the paint.



Exposed oil tank surfaces protected by multi-coat system of anti-corrosion coatings

Long and extensive tests have shown the capacity of such coatings to withstand effects of weather, water, and various chemicals as well as action of steel plates as tank deck rises and falls.

In all, five coats of paint are applied. Exterior surfaces of tank and floating deck and the top three feet of tank interior (all that is exposed when tank is filled and the floating roof up) are first sandblasted down to gray steel. Then a metal conditioning coat is first sprayed on,

MATERIALS

followed by a single heavy coat of anti-corrosive primer. Three finish coats are then applied, ending with aluminum pigmented clear vehicle. Each of these coatings is based on Vinylite resins and covers about 300 square feet per gallon per coat.

The five-coat system provides a coating approximately .0045" thick. Over the five-coat system, a special Vinylite resin-based skid resistant black coating has been used on walkway and steps. Test applications of the five-coat system are still in good condition after six years of exposure to the same condition to which oil tanks are subjected.

(Vinylite resins are a product of Bakelite Company, a Division of Union Carbide & Carbon Corp., New York 17, N. Y. Coatings are produced by Plastics Coatings Corp., Dept. CP, P. O. Box 13127, Houston 19, Texas, and 30 Rockefeller Plaza, New York 20, N. Y.)

Properties of alkyd enamels based on paraffin resin are evaluated

A chemically inert, non-toxic, chlorinated paraffin resin (Chlorowax 70) paint intermediate for formulating air-dried and forced-dried paints or enamels and recommended for incorporation as a portion of the grinding base is announced by the Diamond Alkali Company.

Modification of alkyd enamels with the intermediate results in the addition of flame retardance to the system, as well as improvement of film hardness and chemical and salt spray resistance while maintaining gloss. As a formulating intermediate, the material permits high vehicle solids at relatively thinner viscosity. It responds normally to driers and, when properly formulated, has excellent compatibility.

Laboratory-evaluated properties of Chlorowax 70 coatings prepared by 12 formulae are tabulated in "Chlorowax 70 in Alkyd Enamel Systems", a bulletin offered by Diamond Alkali Company, Dept. CP, 300 Union Commerce Bldg., Cleveland 14, Ohio ... or for more information check CP 4388 on handy form, pages 2 and 3.

Five reactive monomers offered for study ...

ethylenimine and its derivatives useful in numerous preparations, polymerizations

Uses: Ethylenimine and its derivatives are useful monomers for the preparation of pharmaceuticals, lube oil additives, rubber vulcanizers and accelerators, textile additives, etc. Polymerization products are finding application in improving the water and scuff resistance of kraft and cellulose fibers.

Features: Monomers presently available for research and development study are ethylenimine, N-ethylethylenimine, N-methylethylenimine, 2-methylethylenimine, and 2,2-dimethylethylenimine. All are chemically reactive.

Description: Polymerization of these monomers can be effected in acid solution to yield viscous water-dispersed polymers.

Source: Further data is carried in a pamphlet issued by Monomer-Polymer, Inc., Dept. CP, 3430 W. Henderson St., Chicago 18, Ill. ... or for more information check CP 4389 on handy form, pages 2 and 3.

GLYCERINE



**IMPORTANT
FOR NATIONAL
HYGIENE...**



... IMPERATIVE FOR NATIONAL DEFENSE!

Just as shaving creams, lotions, toothpastes and toiletries have become an integral part of our way of life—so too has U.S.P. Glycerine! In the production of toilet goods, Glycerine is a physiologically

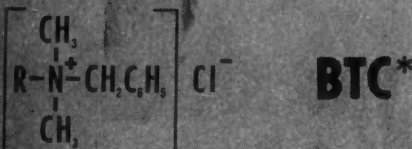
safe humectant ... plasticizer ... oil repellent ... solvent ... and freezing point depressant—
—Indeed, so unusual are its combined chemical and physical properties that Glycerine was one of the original 6 chemicals to be placed under inventory control!

If your supply is limited, keep in mind that in addition to its essential hygienic applications, versatile Glycerine is also a constituent of rocket propellants and other explosives urgently needed by the military.

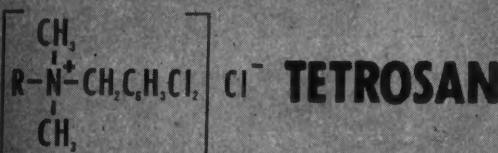
*By Government authorities responsible for inventory control under the National Defense Act.
GLYCERINE PRODUCERS' ASSOCIATION
295 Madison Ave., New York 17, N. Y.

When inquiring check CP 4390 on handy form, pgs. 2-3

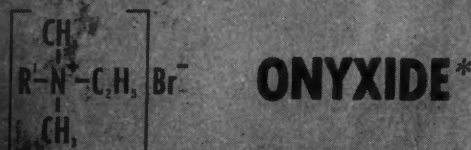
ONYX QUATS are SAFE!



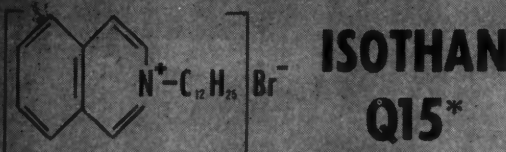
The most widely used cationic bactericide and deodorant. Sold in 50% aqueous solution to disinfectant and germicide manufacturers for dilution and/or incorporation in their own products.



In extensive use as a disinfecting, deodorizing and preventive antiseptic in veterinary and livestock medicines. Used also in pharmaceuticals for topical applications. Sold in 60% aqueous solution. A mixture of alkyl dimethyl 3,4 dichlorobenzyl ammonium chloride and alkenyl dimethyl ethyl ammonium bromide.



The most effective algacide now available. In wide use in swimming pools, cooling water, air conditioning systems, etc. Sold as a 75% concentrate in isopropanol or propylene glycol.



An excellent fungicide. Widely used in the formulation of compounds for use in the control of athlete's foot and dandruff. Sold in 20% aqueous solution.

Trade Mark Reg. U.S. Pat. Off.



ONYX OIL & CHEMICAL COMPANY
INDUSTRIAL DIVISION

184 WARREN ST., JERSEY CITY 2, N. J.

CHICAGO • BOSTON • CHARLOTTE • ATLANTA

In Canada: Onyx Oil & Chemical Co., Ltd., Montreal, Toronto, St. Johns, Que.

For Export: Onyx International, Jersey City 2, N. J.

Because They've Been Tested for Toxicity!!

It was not enough for us to know that, theoretically, quaternary ammonium salts are non-toxic at the use-dilutions recommended for sanitization purposes.

We undertook specific, time-consuming and costly tests to prove, beyond any doubt, that Onyx Quaternaries could be used with complete confidence in their harmlessness. These tests and the conclusions drawn from them are outlined briefly below.

When you use any one of these Onyx Quats, you can not only be sure that they are safe, but that their uniformity and keeping qualities insure effective sanitization at every recommended dilution.

Test Data

These four Onyx Quaternaries have been exhaustively investigated by an independent biological laboratory to determine these questions of toxicity and irritation. Their findings have shown conclusively that all four are non-toxic, non-irritating and non-sensitizing in all use-dilutions of 1-1000 or weaker, and that there is no danger of cumulative toxic action due to chronic ingestion of any residues left on food equipment due to inadequate rinsing. These findings are the result of . . .

- (1) Acute and sub-acute toxicity on guinea pigs, white rats and dogs.
- (2) Chronic toxicity tests based on daily ingestion of sub-lethal, but moderately heavy dosages, carried out on guinea pigs for one year, and on white rats for two years.
- (3) Skin irritation and sensitization tests made on 200 humans.

We welcome your comments on these questions of sensitization and toxicity, and shall be glad to cooperate with you in answering any misconceptions you may run into.

If you are interested in any one of these particular "quats," please ask for data. Onyx BTC is covered in a very thorough technical handbook which also outlines the major characteristics of the quaternaries.

BTC

MATERIALS

Substitute silver-clad steel for brass, other materials subject to NPA order . . .

strip shapes by conventional metal-working processes, assemblies by silver brazing or soft soldering

Uses: Silver-clad steel may be used as a substitute for brass, nickel-silver, nickel, and other restricted materials subject to NPA Order M-47. It can be shaped by stamping, bending, drawing, spinning, and other conventional metal-working processes. Component parts can be assembled by means of silver brazing or soft soldering.

Features: Excellent thermal and electrical conductivities and the high resistance of silver to attack by alkalis and organic acids suit silver-clad steel for a wide range of industrial applications.

Description: Product is a laminated strip consisting of a solid sheet of silver (not an electroplating) clad on either one or both sides of a core of mild steel. It is available in widths up to 4" and in thicknesses down to 0.005", and in any required temper. It is also being manufactured in various silver-to-steel thickness ratios and rolled and slit to commercial or precision tolerances. The strip is produced with a high, as-rolled lustre which requires practically no polishing and can be electroplated directly with gold or other non-restricted metals.

Source: Development of the Rolled Plate Division of the American Silver Company, Inc., Dept. CP, Flushing, N.Y. . . . or for more information check CP 4392 on handy form, pages 2 and 3.

More info on application of stabilized zirconia . . .

use in thermal cracking furnaces, nitrogen fixation and titanate firing is explained

In the March, 1951, issue of CHEMICAL PROCESSING, page 20, a story appeared that presented some facts on stabilized zirconia refractory materials. Some uses were briefly mentioned in that article. This article presents more details on three applications: 1) lining high-temperature pilot thermal cracking furnaces in gas synthesis, 2) kiln furniture in firing of titanate parts, and 3) refractory material in high-temperature gas-burning furnace which is part of a nitrogen fixation process.

Lining cracking furnaces

Electrically fused stabilized zirconia is the only refractory that has been found sufficiently stable for use above 3000°F in a reducing atmosphere in the presence of hydrogen and carbon monoxide. In actual operation, 4250°F has been observed. The extremely low thermal conductivity of the zirconia has permitted simpler design and relatively thin furnace walls. The selection of stabilized zirconia is the result of more than three years of thorough testing. Efficiency has been found to greatly increase with temperature.

Kiln furniture

In the manufacture of barium titanate base material for use as capacitors in communication equipment, the fabricated material must be heated to about 2450°F for sintering. Fused stabilized zirconia has permitted new methods of setting and supporting these shapes during their heating cycle. All other commercially available refractory

When inquiring check CP 4391 on handy form, pgs. 2-3

CHEMICAL PROCESSING

MATERIALS

materials, with the exception of beryllia, react readily with the titanate material, causing it to stick to the setter plates.

These capacitor materials were formerly placed loose in refractory containers imbedded in ordinary zirconia powder. This required slow firing cycles, and gave electrical characteristics not always desired. Because fused stabilized zirconia resists thermal shock very well, the capacitors can now be placed individually in zirconia plates and sintered under a wide range of heating cycles. This makes possible a broad range of electrical characteristics.

Nitrogen fixation

The old Birkeland and Eyde process for the fixation of nitrogen involved direct combination of oxygen and nitrogen under the influence of an electric arc. The power consumption was excessive, making the process impractical in all but a few locations. Scientists at the University of Wisconsin have rejuvenated this process by obtaining the high temperatures in a regenerative furnace burning gas.

The temperature necessary for economical operation is extremely high, and only magnesia and zirconia are available as suitable commercial refractories. However, due to the volatility of magnesia, it probably will not be satisfactory for the high optimum temperature of the process, leaving zirconia as the sole suitable refractory.

(Norton Company, Dept. CP, Worcester 6, Mass. . . . or for more information check CP 4393 on handy form, pages 2 and 3.)

Offers 4 binding resins for cork compositions . . .

2 are plasticized liquid phenolics; 2 are unfilled, dry powder phenolics to which plasticizer must be added

Uses and features: Four binding resins are being offered for preparation of water- and fungus-proof cork compositions. Cascophen CB-312 and CB-314 are recommended for use where maximum tensile strength and maximum flexibility are required, respectively.

Cascophen HP-401 and HP-403 are for creating binders with specific properties, since both require addition of plasticizer by the formulator. The former is noted for its mold and water resistant properties, and the latter for its flexibility. Both find use in shoe materials (inner soles, beach sandals, and platforms), newer types of floor tiles, and gaskets that are to be held in storage before use.

Description: CB-312 and CB-314 are liquid phenolics containing no water, although they may be diluted with small amounts of glycerine, diethylene or triethylene glycol, or a water-alcohol mixture if desired. Storage life of CB-312 at 70°F is four months. CB-314 has a plasticizer that evaporates slowly, and as a result compositions have good stability over a wide range of temperature. HP-401 and HP-403 are both unfilled phenolic resins in dry powder form to which diethylene or triethylene glycol plasticizer must be added by user to gain desired binder properties. Storage life for both powders is 8 to 10 months at 70°F. HP-403 has a slightly longer curing time and exhibits added flexibility, otherwise the two resins are similar.

Source: Products of the Chemical Division of The Borden Company, Dept. CP, 350 Madison Ave., New York 17, N. Y. . . . or for more information check CP 4394 on handy form, pages 2 and 3.

MAY, 1951

are you seeking these
unique properties?
**YOU WILL BENEFIT
FROM VICTAMIDE**

The unique properties of Victamide offer opportunities for improving your process and increasing the selling advantages of your products. If you would like an experimental sample of Victamide, write today . . . on your company letterhead, please. We shall be glad to work with you.



VICTAMIDE

(U. S. Pat. 2122122)

Victamide is an ammonium salt of an amido-polyphosphate. It has the following typical analysis:

TYPICAL ANALYSIS

| | |
|-------------------------------|-------|
| P ₂ O ₅ | 76.1% |
| NH ₃ (Total) | 22.4% |
| NH ₃ (Free) | 15.4% |
| Amide N as NH ₃ | 7.0% |

PHYSICAL STATE

Victamide is a white, fluffy, non-crystalline solid. Its particle size is exceedingly fine, practically all being less than 5 microns. The apparent density is only 22 pounds per cubic foot. Victamide has a slightly salty taste and no odor.

SOLUBILITY

Victamide is highly soluble in water (100 grams will dissolve in 100 cc.), going into solution readily in hot water and slowly in cold. A 5% solution has a pH of approximately 5.3. It is slightly soluble in ethylene glycol, but practically insoluble in alcohol, acetic acid, butylacetate, acetone, benzene, toluene, and carbon tetrachloride.

VISCOSITY OF SOLUTIONS

Viscosity increases with concentration up to 25 centipoises at equal parts by weight of Victamide and water. At this concentration the solution has a specific gravity of 1.394.

Victamide forms complexes with many metallic ions including calcium, magnesium, copper, aluminum, and iron. Chelation is best accomplished in alkaline solution although this is not essential in every case. A chart showing the amounts of Victamide necessary to soften hard waters is given below. The figures show its effectiveness as a water softener when used with soap.

| VICTAMIDE | Hardness of water treated—ppm | | | | | |
|-------------------------|-------------------------------|-----|-----|-----|-----|-----|
| | 500 | 400 | 300 | 200 | 100 | 50 |
| Room temp. oz. per gal. | .74 | .60 | .34 | .14 | .06 | .03 |
| 140°F oz. per gal. | .44 | .28 | .20 | .12 | .06 | .02 |

SEQUESTERING AND WATER SOFTENING

FLAME RETARDANT PROPERTIES

Victamide is an effective fire retardant. It is preferred in applications where an exceptionally high P₂O₅ content, great solubility, and noncrystalline character are important.

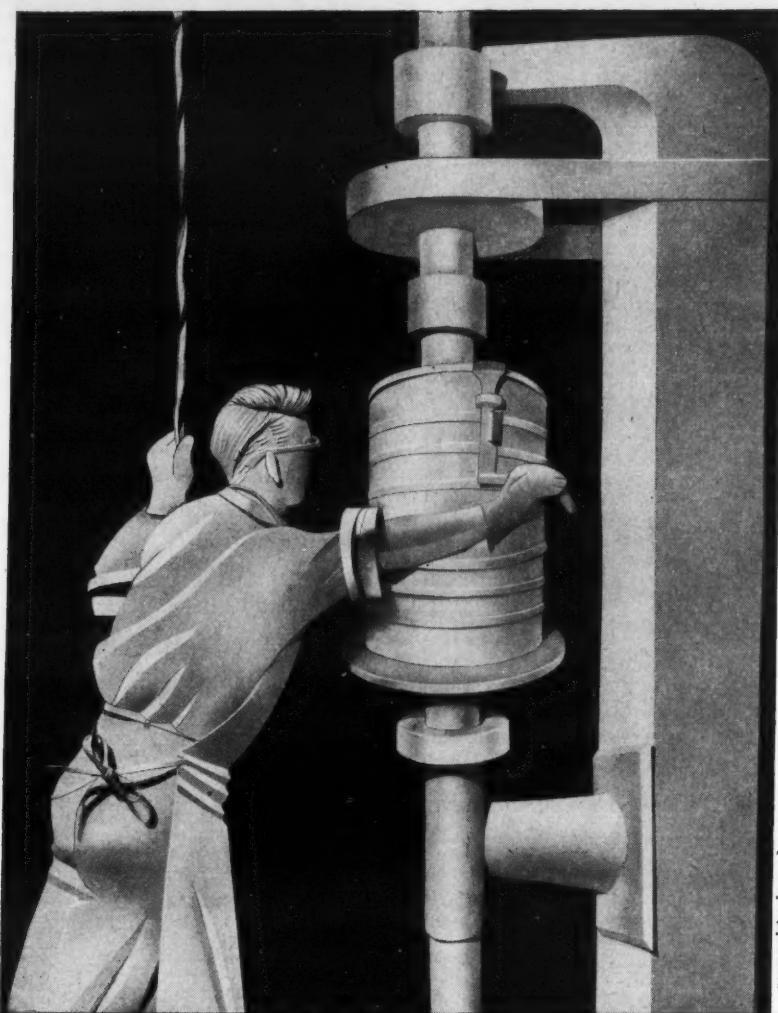
DEFLOCCULATION AND DISPERSION

Victamide's deflocculating and dispersing properties are showing promise in improving the fluidity, pumpability, and solids content of suspensions of kaolin clay, calcium carbonate, and other finely divided solids used in the paper and related industries. These properties also suggest applications in soap and detergent formulations to provide water softening, building, and non-dusting characteristics.

VICTOR CHEMICAL WORKS

141 West Jackson Boulevard • Chicago 4, Illinois
A. R. Maas Chemical Co., Division • 4570 Ardine Street, South Gate, California

When inquiring check CP 4395 on handy form, pgs. 2-3



paper sculpture by goretta-son

a drum you can't beat

to maintain the quality of its products in transit, Niagara manufactures
its own drums . . . assurance to you that Niagara
chemicals and their containers are always dependable.

• NIALK* Liquid Chlorine
• NIALK Caustic Potash
• NIALK Carbonate of Potash
• NIALK Paradichlorobenzene
• NIALK Caustic Soda
• NIALK TRICHLORethylene
• NIAGATHAL*
(Tetrachloro Phthalic Anhydride)
• *Trade-mark



NIAGARA ALKALI COMPANY

60 East 42nd Street, New York 17, New York

When inquiring check CP 4396 on handy form, pgs. 2-3

MATERIALS

Gives corrosion protection to most metals at their serviceable temps . . .

ugged ceramic-type coating useful on alloy steels up to 2600°F; has 'cold' applications too

Uses: Ceramic-type protective coating for metals . . . has been applied to numerous compositions of sheet and cast alloys (including plain carbon and low alloy steels) and subjected to service conditions dictated by the characteristics of these metals, without any evidence of scaling, corrosion, or detachment of coating. Coated high alloy steels (302 and 304 type 18-8 stainless, 16Cr-25Ni-6Mo, Inconel, and Nimonic) have been subjected to temperatures up to 2600°F, also without scaling, corrosion, or detachment.

Coated metals have been subjected to hammering, flexing, vibration, and shock induced by heating to red heat and sudden chilling in water, and even welded without harm to coating.

Specific applications include jet combustion chambers, turbine blades and buckets, electric heating elements, spark plug electrodes, castings in heat treating and forging, boiler tubes, etc.

Features: Good adhesion and elasticity, low vapor pressure at high temperature and low electric conductivity, inertness toward metals, high density and hardness, imperviousness to gases, and resistance to thermal and mechanical shock, as well as to corrosives, are reported for coating.

Description: "Elkote" is a ceramic composition that is being formulated in numerous modifications to suit application, firing, etc., and to make it adaptable to metals and alloys of widely different composition, sizes, shapes, form, and service. For "cold" service, good coatings result after application and drying at room temperature for 48 hours.

Source: Development of Elraco Engineering Company, Dept. CP, 14th & Garden Sts., Hoboken, N. J. . . . or for more information check CP 4397 on handy form, pages 2 and 3.

Announce one adhesive for case liners, another for carton sealing . . .

both have rubber base and are water resistant; one is water dispersion, other has naphtha solvent

Uses: EC-1025 is an adhesive for case liners. EC-863 is a carton sealing adhesive for both asphalt-containing and asphalt-free board.

Features: EC-1025 meets Spec Jan-P-140 Type I (for creped barrier material), Type II (for smooth barrier material), Grade A (fast initial tack), and Grade B (slow initial tack).

EC-863 meets Spec JAN-P-101 Type II (for brush application), Grade A (board without asphalt), and Grade B (board laminated with asphalt).

Description: Adhesive EC-1025 is a black, synthetic rubber, water dispersion; contains no solvent, so does not present fire hazard. Film is water resistant, does not support growth of mold or fungus. Can be applied by brush, spray or roller. Adhesive may be thinned sparingly with tap water. While adhesive is still wet, brushes and equipment may be cleaned with tap water. After drying, the adhesive is no longer sensitive to water and may be

CHEMICAL PROCESSING

MATERIALS

removed with petroleum naphtha. Adhesive dispersion must be protected from freezing.

Adhesive EC-863 is a black, reclaim rubber base product with petroleum naphtha solvent. It is thoroughly resistant to water and maintains adhesion over temperature range of minus 40 to plus 140°F. Application is by brush or spray. If adhesive thickens after standing in open container, it may be thinned with petroleum naphtha. Brushes and spray equipment are cleaned with naphtha. Adequate ventilation and fire precautions are necessary in using the material.

Source: Developed by Minnesota Mining and Manufacturing Co., Dept. CP, 900 Fauquier St., St. Paul 6, Minn. . . or for more information check CP 4398 on handy form, pages 2 and 3.

Simple technique for soldering glass to metal . . .

bonds are stronger than glass itself; soft metal solders absorb expansion differential, prevent cracking

A process for soldering glass to metal that makes a bond stronger than the glass itself has been announced by the General Electric Company. It can also be used for soldering metal to ceramics and carbon.

Glass and metal areas to be soldered are first painted with a thin layer of titanium hydride, and the solder is placed upon both painted areas. Parts are assembled and then heated in vacuum. When temperature reaches about 900°F, the titanium hydride decomposes, causing the solder (already molten) to adhere to the titanium-painted areas of both glass and metal. The bond upon cooling is tight and strong.

Using soft metal solders, it is possible to subject this metal-to-glass seal to rapid temperature changes without danger of cracking. The wide difference in temperature expansion between glass and metal is absorbed by the solder.

Successful application in aircraft ignition systems indicates potential usage in the manufacture of electric motors, capacitors, transformers, etc.

(Information received from the General Electric Company, Dept. CP, Schenectady 5, N. Y.)

Phenolic varnishes used in laminated plastics

Providing fundamental facts concerning various grades and types of laminated plastics, 42-page illustrated booklet describes how they are produced and points out advantages of their use. These laminated plastics are made with a phenolic varnish, and vary in type from sheet stock to plywood crossbanding. Case histories of industrial service are included, together with test data on physical, chemical, and electrical properties.

Information is also provided on methods used in fabrication and finishing. Profuse illustrations show typical products, forming and machining techniques, and various applications. Added feature is list of laminated plastics manufacturers showing types of products — sheets, rods, engraving stock, etc. "Laminated Plastics made with Bakelite Phenolic Varnishes" is issued by Bakelite Division, Union Carbide and Carbon Corporation, Dept. CP, 300 Madison Ave., New York 17, N. Y. When inquiring specify CP 4399 on handy form, pages 2 and 3.

Jefferson

*... hallmark of
high quality
chemicals
from hydrocarbon sources*

The quality of Jefferson chemicals is achieved as a result of close chemical control at every step of the manufacturing process.

Regardless of the pressure of production, regardless of the stress of new demands, you can be sure that such quality will be maintained for your protection.

A request on your company letterhead brings you full information on our available products.

JEFFERSON ETHYLENE DICHLORIDE

Solvent, extractant, intermediate, Jefferson ethylene dichloride has already proved it worth in every part of the chemical processing industry from edible oils to anti-knock fluid. For more details, write to Department D.

Jefferson Chemical Company, Inc.

711 FIFTH AVENUE, NEW YORK 22, N. Y.



ESSENTIAL CHEMICALS FROM HYDROCARBON SOURCES

ETHYLENE OXIDE
DIETHYLENE GLYCOL
ETHYLENE DICHLORIDE
ETHYLENE GLYCOL

Briefs

From recent literature

Paint remover compositions consisting essentially of a chlorinated solvent, such as ethylene dichloride, 0.1-50% by weight of a mixture of approximately equal parts of 90% concentration formic acid and 100% concentration acetic acid, and 0.01-6% by weight of water have been found to have very high stripping power.

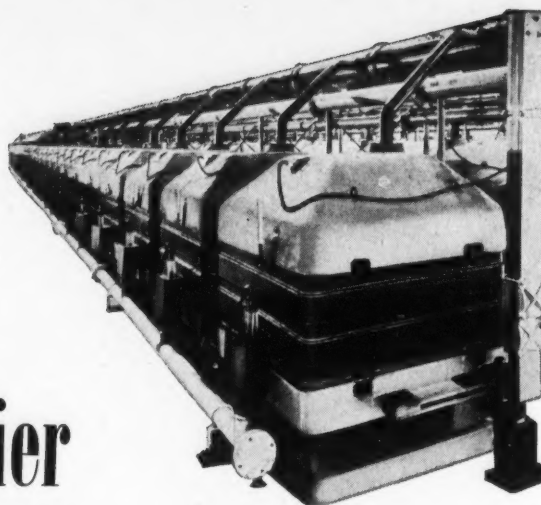
Rubberlike materials having many of the properties of natural rubber are reported from the reaction of ethylene dichloride with a solution or dispersion of sulfur in an alkali metal monosulfide solution. This reaction must take place in a closed reaction vessel and the time and temperature kept as low as possible to produce a satisfactory product.

Alkaloids can be extracted from plant material by use of concentrated aqueous ammonia and ethylene dichloride. For each kilogram of ground plant material, 400 ml. of 30% aqueous ammonia and 4,000 ml. of ethylene dichloride is preferred. It is convenient to operate between room temperature and the boiling point of ethylene dichloride and the extraction time must be determined experimentally for each plant material.

These developments are abstracted from recent publications or U. S. patents. The uses may suggest other applications of Jefferson Ethylene Dichloride in your products or processes.

When inquiring check CP 4400 on handy form, pgs. 2-3

Hooker Chemicals stem from the Type "S" Cells at Niagara Falls and the high-capacity Type "S-3" Cells at Tacoma. In these cells, the highly efficient electrolysis of salt brine produces raw materials of high purity and constant uniformity, in quantity, for use by more than 30 U.S. industries.



HOOKER - basic supplier of INTERMEDIATES...

These Hooker Chemicals are widely used as intermediates by many process industries.

Starting point for all Hooker intermediates is the highly efficient Type "S" Cell. Used by Hooker and by many licensees, the "S" Cell has increased the domestic production and commercial supply of these and other chemicals.

Hooker serves you with strategically located plants and distributing stations; careful control of shipments; skilled customer service. This well-balanced supply "package" has pleased many users.

For the complete list of Hooker Chemicals, send for Bulletin 100. For properties, specifications and uses of any chemicals listed here, ask for Technical Data Sheets. Please request them on your business letterhead.

A WORD ABOUT DELIVERIES—Production of Hooker Chemicals is at an all-time peak, and plant facilities are being expanded to meet your needs as promptly as possible. For up-to-date delivery information, we suggest that you keep in touch with your Hooker sales representative.

Benzal Chloride
Benzoic Acid
Benzotrichloride
Benzoyl Chloride
Benzyl Chloride
Chlorobenzenes
Chlorotoluene
Lauryl Chloride
Monochloroacetic Acid
m-Nitrobenzoyl Chloride
p-Nitrobenzoyl Chloride
Phenyl Isocyanate
Sodium Benzoate
Sodium Sulphydrate
Thionyl Chloride

From the Salt of the Earth

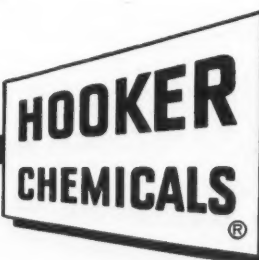
HOOKER ELECTROCHEMICAL COMPANY

15 FORTY-SEVENTH ST., NIAGARA FALLS, N. Y.

New York, New York • Wilmington, California • Tacoma, Washington

ALUMINUM CHLORIDE, ANHYD. • CAUSTIC SODA • CHLORINE • MURIATIC ACID • SODIUM SULFIDE • SULFUR CHLORIDES • SULFURYL CHLORIDE

When inquiring check CP 4401 on handy form, pgs. 2-3



1-516

MATERIALS

Wax alone moisture-proofs electrical components . . .

no longer necessary to impregnate with varnishes and then over-coat with microcrystalline waxes

Uses: Wax is for impregnating electrical components, such as coils, to make them moisture resistant. Waterproofing and laminant applications are indicated for paper, textiles, wood, etc.

Features: Coils impregnated with this wax by a pressure-vacuum technique have resisted shorting-out for a minimum of 30 cycles after being immersed in water containing a powerful detergent before every cycle. Conventionally impregnated and over-coated coils have failed after 6 or 7 cycles in the same test. Eliminates varnish impregnating and over-coating with microcrystalline waxes.

Description: Wax S-1167 is a synthetic, dark colored, organic wax with ball and ring melting point of 248-257°F, and a flash point higher than 482°F. It is tough and does not show extreme brittleness at very low temperatures. It has good electrical properties, and is resistant to both water and oils. When applied to metals as a hot melt, it has good adhesion, and shrinkage is slight after cooling.

Source: Samples and complete specifications are available from maker, Glyco Products Co., Inc., Dept. CP, 26 Court St., Brooklyn 2, N. Y. . . or for more information check CP 4402 on handy form, pages 2 & 3.

Heat-treated aluminum alloys flash welded without need for further heat treatment . . .

improved methods allow welding of dissimilar metals with little intermixing or change in grain structure

Improved percussion welding methods now make it possible to flash weld aluminum tubing directly to copper, stainless steel, Monel, or other alloys without regard to the dissimilar metals in the joint. Flash welding high-strength aluminum alloys is accomplished with the production of flash welds measuring less than .001 inch across the weld zone. The fusion zone is so small that micrographs show practically no intermixing of metals or change in grain structure.

As a result, aluminum tubing and extruded shapes can be welded in the heat treated condition with hardly any decrease in strength through the weld, thereby making it unnecessary to heat treat the metal after welding. Strength of the joint is almost as high as that of the adjacent parent metal.

Of great importance in refrigeration work is the elimination of interior flash. Weld is made in such a manner that no extruded fin remains, either inside or outside the tubing. The metal burned off during flashing vaporizes, leaving only a few small globules inside the tube, which can easily be blown out with compressed air. This advantage can be appreciated by considering the difficulty of removing flash at a joint in the center of a 20 or 30 foot length of tubing. Also, extensive testing has shown that welds made in this manner are gas tight.

Source: This development in the welding field is more fully described in the bulletin, Technical Advisor No. 12, issued by Reynolds Metals Company, Dept. CP, 2500 S. Third St., Louisville 1, Ky. . . or for more information check CP 4403 on handy form, pages 2 and 3.

CHEMICAL PROCESSING

MATERIALS

Ease of processing is marked for latest silicone rubber . . .

fabricated parts exhibit improved mechanical, electrical values

Uses: Silicone rubber compound for fabrication of such mechanical goods, as diaphragms, boots, sleeves, belting, hose, mountings, and a host of others.

Features: Ease in processing is perhaps the most outstanding characteristic of this material. Molded parts have improved mechanical and thermal properties.

Description: Silicone rubber 81223 is reported to possess excellent molding and extrusion properties after merely a 5-minute warm-up period. Some parts can be fabricated from it without prolonged oven cure, often desirable.

Because the material has good hot tear strength, parts with undercuts can be easily removed from molds. Since it is neutral in color, stock can be colored for product identification purposes.

In addition, fabricated parts exhibit high tensile strength, good elongation, excellent electrical properties, and are serviceable over the temperature range minus 85 to plus 550°F.

Source: Developed by the General Electric Company, Dept. CP, Pittsfield, Mass. . . . or for more information check CP 4404 on handy form, pages 2 and 3.

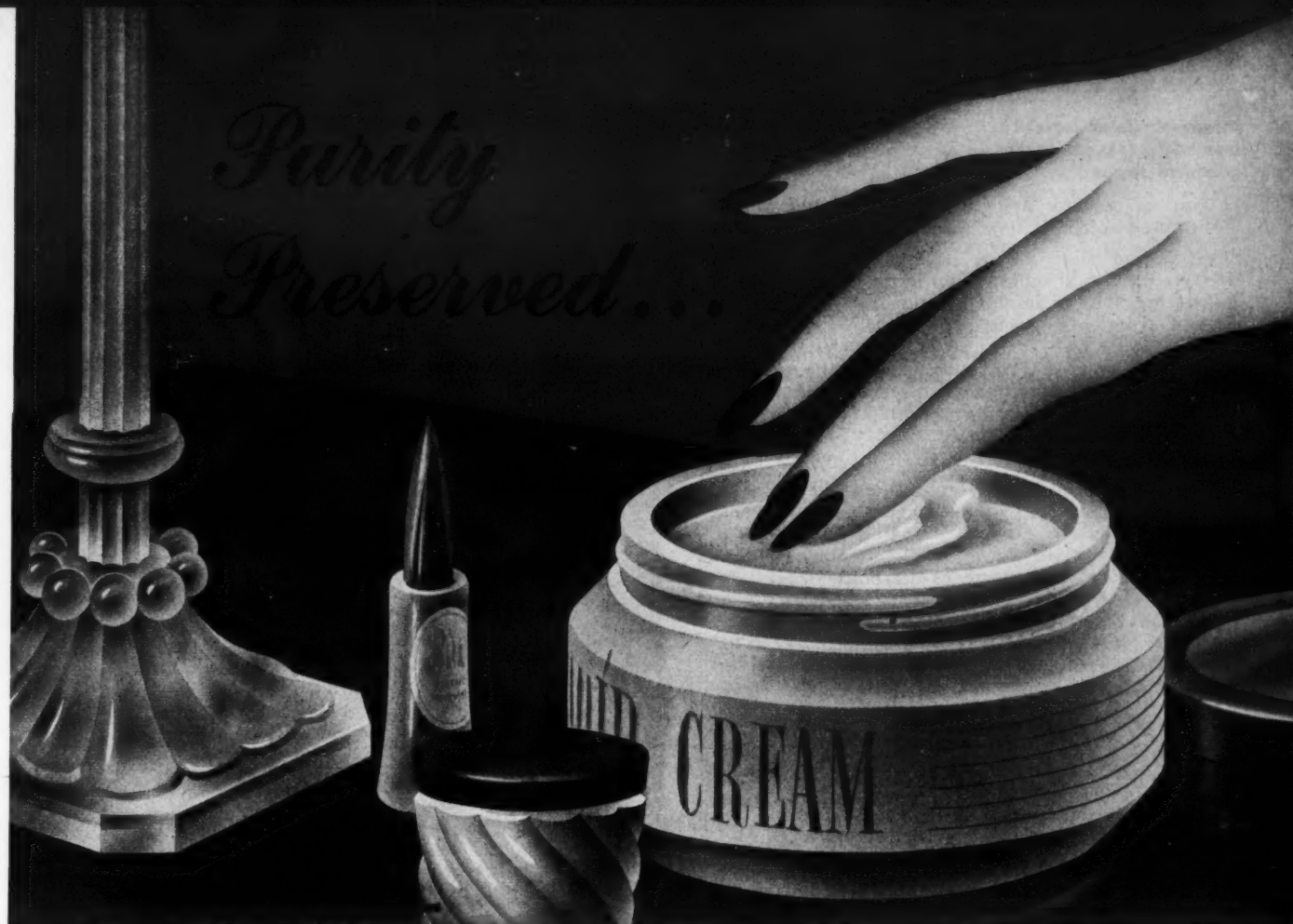
Bulletin describes units for chemical control

Four-page service bulletin describes and illustrates a number of units designed for chemical control. Descriptions are concise, with main components listed for most of the control sets.

Included are sets for pH determination, water alkalinity, soil testing, chlorine control, and corrosion control; a small-scale filter; permanent color standards; and an electroplating control kit.

Service Bulletin G-2-50 is issued by LaMotte Chemical Products Co., Dept. CP, Towson 4, Md. When inquiring specify CP 4404 on handy form, pages 2 and 3.

For more information on product advertised at right, specify CP 4406 . . . see information request blank between pages 2-3.



Heyden

PARASEPTS®

(ESTERS OF PARAHYDROXYBENZOIC ACID)

Products subject to deterioration through bacterial and fungal action—cosmetics and creams, pharmaceuticals and pastes—need "purity insurance" to maintain sales preference and prestige. Heyden PARASEPTS have proven themselves reliable allies of industry and research in preventing spoilage of

products containing oils, fats, gums or carbohydrates—through effective preservation that means permanent protection of quality.

Five PARASEPTS are listed here. They are available in technical as well as purified grades. Shipped in 100, 50, and 25-lb. fiber drums.

METHYL PARASEPT
(Methylparaben U.S.P.)

ETHYL PARASEPT
PROPYL PARASEPT
(Propylparaben U.S.P.)

BUTYL PARASEPT
BENZYL PARASEPT

Technical information and samples supplied upon request.

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SERVING INDUSTRY THROUGH FINER CHEMICALS



Chemicals

MATERIALS

Silver-tin-lead solders use 50% less tin than tin-lead types . . .

can be used for practically any application where tin-lead solder is now employed

Silver-tin-lead alloy solders have been developed to conserve the critical supply of tin in this country. These solders use 50% or less of the tin ordinarily used in tin-lead types. In general, these "ST (Save Tin)" solders can be used for every purpose where tin-lead types have been used. The same fluxes can be used and the identical means of application are completely satisfactory, except that a little more heat is required for melting. Joints are equal.

This series of solders was developed through the efforts of the newly formed Metals Conservation Committee of the Federated Metals Division, American Smelting and Refining Company. Objectives of the group, which plans to meet regularly, are briefly: 1) to develop new alloys which either eliminate or drastically reduce use of critical non-ferrous metals; 2) to investigate new applications for existing alloys to replace alloys requiring greater quantities of strategic materials; and 3) to recommend alternate alloys to meet requirements of non-ferrous metal users.

(Federated Metals Division, American Smelting and Refining Company, 120 Broadway, New York 5, N. Y.)

Gives specifications and uses for vinyl acetate resins

Compiled as technical reference source, 28-page illustrated booklet presents latest data on forms, properties, and applications for vinyl acetate resins. Under separate headings, acetate resins, alcohol-acetate resin solutions, and acetate resin dispersions are discussed, with particular reference to their inherent qualities as bonding agents. Both table and text provide essential data on solution viscosity, toughness, film strength, compatibility, and softening temperature.

Also included is detailed information for the preparation of these resins for adhesives and other uses, such as in paper coatings and metallic inks and lacquers. In each case the formulation and methods of use are explained. Subjects include preparation of solutions, emulsions, and hot melts; use of plasticizers; and cold- and hot-set methods of bonding. "Vinyl Acetate Resins" is issued by Dept. 1503, Bakelite Company, a division of Union Carbide and Carbon Corporation, Dept. CP, 300 Madison Ave., New York 17, N. Y. When inquiring specify CP 4407 on handy form, pages 2 and 3.

For quantitative determination of carbohydrates . . .

few substances have been found that interfere with anthrone as a reagent

Uses: Useful for determining mono and polysaccharides and their esters, and the presence of gums, glucosides, starches, and complex sugars with organic groups such as glycolipids and nucleic acids.

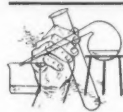
Features: Anthrone (9,10-dihydro-9-ketoanthracene) now available as a reagent. Few substances have been found to interfere with the reagent.

Description: Anthrone is a pale yellow powder melt-

MONSANTO
CHEMICALS AND PLASTICS



THE WORLD'S LARGEST elemental phosphorus plant, the Monsanto plant at Monsanto, Tennessee, now is expanding production. The largest phosphorus furnace in the world soon will be completed. The Monsanto plant, located on the Tennessee beds of rich phosphate rock, already has five furnaces in operation producing elemental phosphorus of better than 99.9% purity from which Monsanto quality phosphates are derived.



Research Chemists' Corner

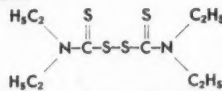
You may find something new here

With these three Monsanto chemicals, your research may reveal ways to improve products, create new materials or replace hard-to-get ingredients. If specifications given here suggest such possibilities, send for samples for experimentation. Samples will be sent to qualified persons without cost or obligation.

Tetraethylthiuram disulfide

—Bis (diethylthiocarbamyl) disulfide

STRUCTURE:



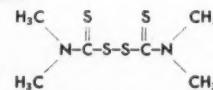
APPEARANCE: Light-gray to white powder.
SPECIFIC GRAVITY: 1.30 at 25° C.
MELTING POINT: 67° C. min.
SOLUBILITY: Soluble in acetone, benzene and naphtha.
ASH: 0.5% max.

SEND FOR BOOKLET — "30 Special Monsanto Chemicals" will be sent to you free upon request. Indicate your wishes on the coupon.

Tetramethylthiuram disulfide

—Bis (dimethylthiocarbamyl) disulfide

STRUCTURE:

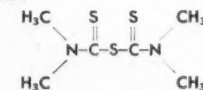


APPEARANCE: White powder.
SPECIFIC GRAVITY: 1.29 at 25° C.
MELTING POINT: 146° C. min.
FINENESS: (200-mesh) 0.5% max. retained.
SOLUBILITY: Soluble in acetone and benzene.
ASH: 0.5% max.

Tetramethylthiuram monosulfide

—Bis (dimethylthiocarbamyl) sulfide

STRUCTURE:



APPEARANCE: Lemon-yellow powder.
MELTING POINT: 103° C. min.
FINENESS: (200-mesh) 1.0% max. retained.
SOLUBILITY: Slightly soluble in benzene, acetone and carbon tetrachloride.
MOISTURE: 0.5% max.
ASH: 0.5% max.

Santomerse No. 1 a versatile detergent and wetting agent

There's a good reason why Monsanto Santomerse* No. 1 is called the all-purpose detergent and wetting agent. The reason: *versatility*.

Santomerse No. 1 is used effectively for cleaning, penetration, dispersion, emulsification and spreading. With such versatility, all-purpose Santomerse No. 1 is adding to efficiency in numerous operations in industry.

Anionic Santomerse No. 1 has a minimum of 40%-active alkyl aryl sulfonate, the remainder being principally sodium sulfate builder. This is the combination found best for high efficiency and economy.

Santomerse No. 1 is effective in hard or soft water, in acid or alkaline baths, in hot or cold solutions. In operations where the pH is important, Santomerse No. 1 can be used because it does not affect the pH to any marked degree.

If you use a detergent and wetting agent in your industrial processes, look into the possibilities Santomerse No. 1 offers. Write for a copy of Monsanto's booklet, "Santomerse No. 1 All-purpose wetting agent and detergent," which gives much useful technical information.

Sterox SE, SK, No. 5, and No. 6 rapid-acting wetting agents

If you have an operation that calls for wetting out, spreading, penetrating, scouring or emulsifying, look into the possibilities of the Monsanto Steroxes.

Sterox* SE and SK are 100%-active non-ionic detergents which offer high sudsing and controlled dusting. Sterox 5 and 6 are like SE and SK, respectively, except that they are 85% active. All are liquids and all readily soluble in water at room temperature.

For complete details, mail the coupon for Technical Bulletin No. P-133 (on SE and SK) and Technical Bulletin No. P-136 (on No. 5 and No. 6).

These uses may suggest ways you can employ Santomerse No. 1

The uses for Santomerse No. 1 are so numerous that it is next to impossible to name them. Here are a few applications for the all-purpose detergent and wetting agent which may suggest other uses to you.



Metal Industry

Santomerse No. 1 in the acid bath for cleaning, treating or pickling metal improves operations and the quality of the work.



Railroad Car Cleaners

Santomerse No. 1 improves the detergency of acid-type cleaning compounds to remove scale and road grime.



Household Cleaners

Santomerse No. 1 formulations make excellent cleaners for home laundering, dishwashing, floor and wood-work cleaning and in numerous other cleaning jobs.



Dehairing Hogs

Santomerse No. 1 in the scalding vat speeds up the removal of hair and scurf.



Dairy Cleaners

Santomerse No. 1 adds to the efficiency of acid, neutral and alkaline dairy cleaners.



Agricultural Sprays

Used as a wetting and dispersing agent, Santomerse No. 1 increases the effectiveness of the spray.

Unload 'em quickly and send 'em home

If you buy chemicals in carboys, drums or tank cars, empty the containers as soon as you can and send 'em home. We suggest this whether they're Monsanto containers or not. The sooner your supplier gets back his containers, the sooner he can fill 'em and ship 'em to give you better service.

AROCLORS improve quality...economically ...in numerous paints and plastics

Many paints and numerous plastics gain extra qualities when Monsanto AROCLORS are incorporated into their formulas. And, since the AROCLOR* probably costs less than an ingredient it replaces, production costs are lowered.

The AROCLORS (chlorinated biphenyl and chlorinated polyphenyls) are used in modified and synthetic rubber coatings, lacquers, hot-melt strip coatings, vinyl protective coatings, maintenance paints, adhesives, fire-resistant paints and marine paints. With AROCLORS, the coatings gain in gloss, toughness, nonflammability and resistance to water, acids, alkali and other corrosive influences. Paints made with AROCLORS have excellent adhesion.

Various AROCLORS are employed in the plastics industry as coplasticizers with more expensive plasticizers.

There is a series of AROCLORS, both liquids and resins, from which you can choose exactly the properties you want. For details, mail the coupon or contact the nearest Monsanto Sales Office.

Monsanto Isocyanates offer possibilities in product development

Monsanto was the first American company to produce isocyanates, a group of German-developed industrial products which have many unexplored possibilities.

Already the products are being used in adhesives, paints, rubber, plastics and textiles. They are employed in the fields of high polymers, copolymers and terpolymers, and may have possibilities in medicinals, insecticides and other compounds.

At present, Monsanto is producing ethyl isocyanate, phenyl isocyanate, octadecyl isocyanate and p,p' Diisocyanato-diphenyl methane.

If interested in the isocyanates, mail the coupon for a copy of Monsanto Technical Bulletin No. P-125. It's highly technical.



AN AROCLOR was used in compounding this Thermo-Dip plastic coat which is used to protect the metal gear from rust.

HB-40 used as extender for primary plasticizers

Monsanto HB-40 (partially hydrogenated terphenyl) is used as an extender for primary plasticizers in vinyls. As much as 25% to 50% of HB-40, on the total weight of the plasticizer, may be used. HB-40, being practically water-white, can be used in properly stabilized clear and tinted vinyl plastics. It is a low-cost plasticizer for styrene plastic dispersions and casting resins. Mail the coupon for details.

MONSANTO CHEMICAL COMPANY, 1704-E South Second Street, St. Louis 4, Missouri. District Sales Offices: Birmingham, Boston, Charlotte, Chicago, Cincinnati, Cleveland, Detroit, Los Angeles, New York, Philadelphia, Portland, Ore., San Francisco, Seattle. In Canada, Monsanto (Canada) Ltd., Montreal.

*Reg. U.S. Pat. Off.



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SEND INFORMATION: ☐ Santomerse No. 1. ☐ AROCLORS. ☐ Isocyanates. ☐ HB-40.

SEND LITERATURE: ☐ Booklet, "30 Special Monsanto Chemicals." ☐ Bulletin, No. P-125. ☐ Bulletin No. P-133. ☐ Bulletin No. P-136. ☐ Booklet, "Santomerse No. 1 All-purpose wetting agent and detergent."

SEND SAMPLES: ☐ Tetraethylthiuram disulfide. ☐ Tetramethylthiuram disulfide. ☐ Tetramethylthiuram monosulfide.

MONSANTO CHEMICAL COMPANY
1704-E South Second Street, St. Louis 4, Missouri

Please send, without cost or obligation, information, literature or samples as indicated at the left.

Name.....Title.....

Company.....

Street.....

City.....Zone.....State.....

MATERIALS

ing at 153-5°C. For the quantitative determination of carbohydrates, the color produced with anthrone is measured with an instrument that determines color intensity, such as the spectrophotometer.

Source: Product of Jasonols Chemical Corporation, Dept. CP, 1085-87 Myrtle Ave., Brooklyn 6, N. Y. . . . or for more information check CP 4409 on handy form, pages 2 and 3.

Computer eases selection of metal substitutes

Pocket-sized computer quickly tells the proper non-ferrous or stainless steel alloys to use in 142 corrosive situations. Excellent secondary use is in the selection of substitute materials when the alloy commonly used is unavailable.

Computer is printed in 3 colors on heavy paper board, operates on the slide rule principle. Inner member is moved to align the corrosive agent with a large arrow; a window then rates 13 non-ferrous and stainless steel alloys as excellent, good, fair, or not good for this agent. Corrosion computer is issued by The H. M. Harper Company, Dept. CP 8200 Lehigh Ave., Morton Grove, Ill. When inquiring specify CP 4410 on handy form, pages 2 and 3.

Na-Ca combination offered as low-cost source for metallic sodium . . .

use also foreseen in reactions where the calcium content will prove advantageous

A metallic sodium-calcium combination that is normally recycled in the manufacture of metallic sodium by electrolysis of sodium chloride is being offered to industry for evaluation. Use is seen as a low-cost source for metallic sodium or for reactions where the calcium content will prove helpful.

Combination is unique in that the calcium is dissolved in the sodium only to a small degree, the rest appearing as a flocculent material usually in fine subdivision. A mixture rather than alloy, it has no true melting point. It softens and begins to flow at approximately 98°C, and can be satisfactorily handled at temperatures of 110°C.

Typical analysis (by weight) of the combination is: 65-75% sodium . . . 15-25% calcium . . . 10% sodium monoxide . . . 1% sodium and calcium chlorides. Product is shipped in brick form, packed dry in 55-gallon drums. (Information received from National Distillers Chemical Corporation, Dept. CP, Ashtabula, Ohio.)

Describes properties, uses of liquefying compound

Properties and uses in paper coatings and surface sizing are described in technical bulletin on liquefying compound. Properties of special interest include capacity for reducing viscosity of colloidal solutions of such materials as starches and proteins; tendency to stabilize viscosity of these same materials; effect in retarding bacterial growth; and ability to improve heat stability or performance of acidic paper or paper exposed to acid conditions.

Technical Bulletin 21-A is issued by American Cyanamid Company, Industrial Chemicals Div., Dept. CP, 30 Rockefeller Plaza, New York 20, N. Y. When inquiring specify CP 4411 on handy form, pages 2 and 3.

When inquiring check CP 4408 on handy form, pgs. 2-3

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| Cresylic Acids | Dibutyl Phthalate | Neutral Coal-tar Oils |
| Chlorinated Tar Acids | ELASTEX® DCHP Plasticizer | Coal-tar Creosote |
| Xylenols | "ELASTEX" 10-P Plasticizer | CUMAR® Paracoumarone-Indene Resin |
| Pickling Inhibitors | "ELASTEX" 50-B* Plasticizer | Carbonex® Rubber Compounding Hydrocarbon |
| Benzol | "ELASTEX" 28-P Plasticizer | Bardol® Rubber Compounding Oil |
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THE BARRETT DIVISION

ALLIED CHEMICAL & DYE CORPORATION

40 Rector Street, New York 6, N. Y.

*Reg. U. S. Pat. Off.

MATERIALS

Color of paint indicates surface temp . . .

15 types aid study of cooling systems and lubricants for internal combustion engines

A paint which changes colors as temperature increases is being used by the Technical Service Department of Socony-Vacuum Laboratories in studies of cooling processes for aircooled internal combustion engines. The color bars created by different temperatures on a painted engine are said to be fundamentally similar to isotherms of a weather map. Paint thus aids in determining proper locations for thermocouples to measure internal heat while an engine is operating.

Paint is made in 15 basic shades, some of which are capable of six complete alterations in color as temperatures rise. One such paint, originally violet blue when cold, becomes bright green at 311°F, olive green at 446, dark gray at 545, light gray at 554, light brown at 572, and buff at 644°F. Another, basically red, becomes brown gray at 770°F, yellow at 914, orange at 1067, and green at 1472°F.

Paint is important in tests of heat transfer qualities of lubricants as well as of efficiency of aircooling arrangements. It may well aid in development of higher efficiency lubricants for all types of internal combustion engines.

(Information received from Socony-Vacuum Oil Company, Inc., 26 Broadway, New York 4, N. Y.)

Availability of over 200 monomers announced . . .

reactivity of double bonds extends applications beyond the plastics and resins fields

Uses: Over two-hundred monomers are being offered to the chemical field in research, pilot plant, or production quantities.

Features: By virtue of their reactive double bond, these monomers find applications beyond the plastics and resins fields.

Description: Monomers include vinyl, allyl and diallyl esters; alkyl acrylates and methacrylates; substituted styrenes and ethylenimines; and vinyl halides, ethers, and heterocyclics.

Source: Complete listing is available from Monomer-Polymer, Inc, Dept. CP, 3430 W. Henderson St., Chicago 18, Ill. . . . or for more information check CP 4413 on handy form, pages 2 and 3.

Formulator adds plasticizer to polystyrene latex emulsion to get desired coating . . .

makes it easy for formulator to make water paints that suit varied applications

A new approach to protective and decorative coatings in the water paint field has recently been developed. It embodies the use of polystyrene latex emulsions that can be post-plasticized by the coating formulator. This permits him to add the amount and type of plasticizer he wants, giving him the opportunity to adapt the coating to meet specific applications. The emulsions are reported to pass through several cycles of freezing and thawing without breaking.

Vehicle of the post-plasticizing system is non-oxidizing,

MATERIALS

and the film is formed by evaporation of water rather than solvents. Non-oxidizing characteristic of the resin yields films having superior aging properties. It is not subject to spontaneous combustion, and exhibits its ultimate film properties after relatively short periods of time. (Plastics Division, Monsanto Chemical Company, Springfield, Mass.)

Exceptional weatherability reported for enamel

High gloss resin enamel for wood, metal, and concrete is detailed in 4-page, 3-color bulletin. Tests indicate exceptional weatherability for this product; a single coat was put on a steel panel, then subjected to 40 of the following cycles without failure: 17 hours alternating water spray and ultra-violet light, 3 hours continuous water spray, 1 hour quick freezing at -10°F , 1 hour thawing. Despite a large X scratched into the panel through the coat, enamel showed no film breakdown, no loss of gloss or color, no under-film corrosion or loss of adhesion to the steel.

Enamel can be applied by normal methods and is dry enough to handle in one or two hours. Usually a single coat is enough, although primers will naturally mean a better job. Coverage is 450 to 600 sq ft/gal. Range of colors available is fairly wide; company will match colors on large orders. Further details are given in Bulletin 239, issued by The U. S. Stoneware Co., Dept. CP, Akron 9, O. When inquiring specify CP 4414 on handy form, pages 2 and 3.

'Paste' metal parts together for metal-to-metal bond stronger than riveting . . .

rubber cement being used to assemble gasoline tanks, bond brake linings to brake shoes

A rubber cement, developed since the end of World War II, is reported to form a metal-to-metal bond stronger than rivets and bolts. "Plastilock" was first used to bond brake linings to metal brake shoes in automobiles. In this specific application, the elimination of rivets has increased service life of linings some 75%.

One manufacturer is using the cement to make a stronger gasoline tank by cementing the metal sections together. Nuts, bolts, and gaskets are no longer necessary, fabrication is speeded by elimination of conventional assembly operations, and the cement make a positive seal against petroleum products.

(Summary of information received from The B. F. Goodrich Company, Dept. CP, Akron, Ohio.)

Four times strength of cement attributed to resurfacer

Four-page bulletin describes floor resurfacing and patching material that withstands loads from 2 to 4 times as great as standard cement. Because of its ability to resist acids, oil, and moisture, the material is recommended for use in electro-plating plants, foundries, distilleries, breweries, bottling plants, packing plants, refineries, textile mills, etc. "Armor — C41-1" is issued by The Monroe Company, Inc., Dept. CP, Cleveland 6, Ohio. When inquiring specify CP 4415 on handy form, pages 2 and 3.

YOU ARE SAFE when your source of supply has

- **SEVERAL APPROACHES TO EACH PROBLEM**
- The Armament Program must inevitably produce dislocations and allocations. The field of Organic Chemicals will know its share.
- In all of our divisions . . . of surfactants — textile, leather and paper chemicals — chemical intermediates and carbonyl iron powders . . . we are organized for full production, backed by tremendous research, warehousing and service facilities.
- Out of long and extensive research, we can offer our customers many approaches to each of their chemical processing operations. This provides an important margin of safety — for you, as well as for us. Moreover, we invite you to make use of our highly specialized laboratories as an adjunct to your own.
- We invite the opportunity to work with you — in the improvement of an existing product, the development of a new product or the establishment of a second or third line of defense against possible interruption of your materials supply. Your inquiry will bring a prompt response, involving no obligation.

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Boston • Providence • Philadelphia • Charlotte, N. C. • Chicago • Portland, Ore. • San Francisco
IN CANADA: Chemical Developments of Canada Limited, Leaside, Toronto 17

When inquiring check CP 4416 on handy form, pgs. 2-3

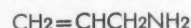
Quality FINE CHEMICALS

Chemical Process

Intermediates

Commercially Available

ALLYL AMINE



DIALLYL AMINE



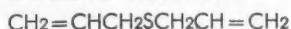
ALLYL ISOTHIOCYANATE



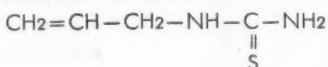
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Plant and Office . . .
RINGWOOD, ILLINOIS

When inquiring check CP 4417 on handy form, pgs. 2-3

MATERIALS

**Newer form of floor patch
has finer aggregate to
fill smallest cracks . . .**

bonds well to concrete surfaces; acid, oil resisting
Uses: Resurfacing and patching material for concrete floors.

Features: "Armor" retains all of the advantageous properties of previously announced counterparts by this manufacturer, and in addition, the newer form is made-up of finer aggregate which is reported more effective as an over-all resurfacer since it fills the most minute cracks in concrete floors.

Bonds very well to old concrete surfaces, and provides a flush patch when used in areas of appreciable size. Acid and oil-resisting properties make the product especially useful in distilleries, breweries, bottling plants, packing plants, refineries, textile mills, electro-plating plants, etc.

Description: Product is a dry cementitious type powder madeup of pulverized pure-oxidizing metal grains and four different kinds of aggregate, chemicals, and setting agent. Adding water and applying in a manner similar to concrete is application technique.

Source: Armor floor patch and resurfacer is a product of The Monroe Company, Inc., Dept. CP, Cleveland 6, O. . . or for more information check CP 4418 on handy form, pages 2 and 3.

**Quizzing industry about
possible utilization of
fission products . . .**

study may lead to less costly radioactive materials
New industrial uses for by-products of the atomic energy program are being investigated by the Stanford Research Institute for the U. S. Atomic Energy Commission. Immediate objectives of the study are to acquaint industrial concerns with characteristics of fission products and to obtain industry cooperation in developing estimates of their possible utilization.

Fission products are highly radioactive mixtures of elements produced by splitting of uranium during plutonium production in nuclear reactors. They are not useful as sources for industrial or explosive power, but only for the radiations they emit. Large quantities are now stored in mixture with contaminants in underground tanks at the Hanford, Washington, works. Isotopes of elements which make up fission products are, in general, radioactive and within atomic weight range of 72 to 162.

As a result of the study, industry may be offered an opportunity to tap large-scale, low-cost sources of radioactivity. For example, the cost per curie of fission products in large quantities is estimated to be in the range of 1/100 to 1/1000 the price of most of the radioactive materials now available.

Five capabilities of fission products that might be interesting to industry are: ability to kill organisms, induce chemical reactions, ionize gases, activate phosphors, and produce rays that can penetrate solids.

(Scope and objectives of the program are contained in a booklet, "Industrial Utilization of Fission Products—A Prospectus for Management." Copies may be obtained by writing to Project 361, Department of Business and Industrial Economics, Stanford Research Institute, Stanford, Calif.)



SOLKA-FLOC

**Stands Out
for Strength!**

SOLKA-FLOC fibres are tough yet soft . . . completely non-abrasive to equipment and machinery that handles them. Their inherent softness makes possible *flocked surfaces of rare beauty*. Use SOLKA-FLOC as a filler for such products as *rubber soles, floor tiling, plastic tableware and electrical parts*.

**Put SOLKA-FLOC to work for you.
Write for samples and quotations.
Address Dept. CP-5.**

**A PRODUCT OF
BROWN Company**



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DUIT & CORES • ONCO INSOLES • CHEMICALS

When inquiring check CP 4419
on handy form, pgs. 2-3

CHEMICAL PROCESSING

MATERIALS

Waxes don't melt, adhere better . . .

special process gives ordinary
waxes non-melting feature

Uses: Have been highly successful as impregnants for fibre packing for use in pumps and valves. Possible applications are as coatings for paper and fibre containers, for impregnating seals for electrical transformers, and in "dry drawing" of steel.

Features: Processed waxes do not melt. They retain shape when placed on hot plate. If a ball of processed wax is placed in boiling water it does not melt to form a two-phase liquid system. Processed waxes have higher softening points and better adhesion characteristics than the waxes from which they are made.

Description: Non-melting waxes are made by processing ordinary waxes such as paraffin, microcrystalline, petrolatum, carnauba, candelilla, ouricuri, beeswax and others.

Processed waxes are darker and harder than the unprocessed. Softening point is higher — for instance, softening point of paraffin wax is raised from 126.5 to 161°F. Flash points are unaltered.

These waxes are available in solid state and as solvent-wax mixtures. The mixtures are liquid at elevated temperatures, and are recommended where wax is to be used for impregnating or coating. Any suitable, available solvent may be specified.

Source: Made by Flexrock Company, Dept. CP, Filbert & Cuthbert, W. of 36th St., Philadelphia 4, Pa. . . . or for more information check CP 4420 on handy form, pages 2 and 3.

Details 18 caseins and caseinates

Chart listing properties and characteristics of 18 caseins and caseinates will be of interest to those requiring water-resistant binders, coatings, or emulsifiers. Products can be produced to match extremely varied requirements. Bulletin P-16-7D is issued by The Borden Company, Chemical Div., Dept. CP, 350 Madison Ave., New York 17, N. Y. When inquiring specify CP 4421 on handy form, pages 2 and 3.

For more information on product at right, specify CP 4422 . . . see information request blank between pages 2-3.



PROUD TO HAVE
grown up
WITH YOU, SON...

If you're like many others in industry, you became accustomed to using Mallinckrodt chemicals in the chemistry class back in your student days. And many of you still specify Mallinckrodt chemicals whether you have since become a purchasing agent, research director, production manager, or top administrative executive.

Such loyalty is no accident. In 1919—about half a century after the founding of this business—Edward Mallinckrodt, Sr. expressed its continuing policy:

"We realized from the start that business depends on reciprocal relations and confidence; that we would have to establish a reputation for fair, honorable, liberal dealings and to make it to the interest of the buyer to place his orders with us, by supplying goods of the highest quality at competitive prices, giving prompt service and endeavoring to satisfy our customers as far as possible in every respect."

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ORGANIC INTERMEDIATES • INORGANIC
CHEMICALS • CHEMICALS FOR ELECTRONIC
USES • METALLIC SOAPS • ANALYTICAL
REAGENTS • PHOTOGRAPHIC CHEMICALS

• MANUFACTURERS OF FINE CHEMICALS FOR INDUSTRY • SINCE 1847 •

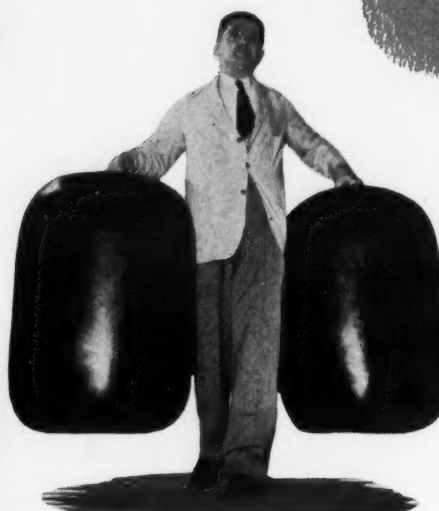
Rubber-fabric Drums Collapse to 1/8 Expanded Size When Emptied of Liquids, Powders

Cut re-shipment costs; handy to lift, roll; no venting; non-corrosive; non-absorbent, easily cleaned



Synthetic rubber-fabric drum, left, has been filled to its 55-gallon capacity. At right, drum is being filled through simple fitting. Collapsed drum, foreground, demonstrates how space savings are effected in storage and re-shipments

Rounded corners, well balanced contours make it easy to roll and position drums in storage. Note plate in center of top of drum to which lifting handle is attached; also filling-emptying bung, to one side



Drums, when expanded with air, weigh so little that one man easily holds two at a time. Close conformation to standard drum and barrel dimensions is apparent



Drum lends itself to a variety of positions for efficient emptying. Here, by addition of a metal plate, contents are completely drained while drum is suspended from above

SES: For shipment of oils, greases, fats, acids, paints, emulsions, soaps, dry powders, and a variety of pharmaceutical and industrial chemicals.

Features: Designed to effect sizable savings in return shipping costs, since more than 2500 collapsed drums can be shipped in a standard railroad box car. Such cars can hold only 300 rigid drums. Drums are equipped with simple, yet effective fittings for filling, emptying, lifting, and handling. They are easy to lift, roll, and stow. No venting is required, and they are easy to clean. Drums are so tough and durable that it is believed practical to use them for transporting liquids by air and for dropping by parachute. No-venting features can contribute to safety in handling hazardous acids and liquid combustibles.

Description: Synthetic rubber-fabric drums, of 55-gallon capacity, are made of "Ustex" cord fabric, impregnated with synthetic rubber and molded in one piece. The cord fabric is a strong, low stretch cotton textile. Drum material is non-corrosive, non-absorbent and highly resistant to weathering. Empty, drums weigh less than 30 lb. They retain shape without appreciable distortion.

Source: United States Rubber Company, Dept. CP, Rockefeller Center, 1230 Avenue of the Americas, New York 20, N. Y. . . . or for more information check CP 4423 on handy form, pages 2 and 3.



Drum collapses as it is emptied. No venting is necessary and spigot is easily installed. Many hazards in handling combustibles are eliminated. As inner surfaces have no corner pockets, thorough cleaning is a simple matter

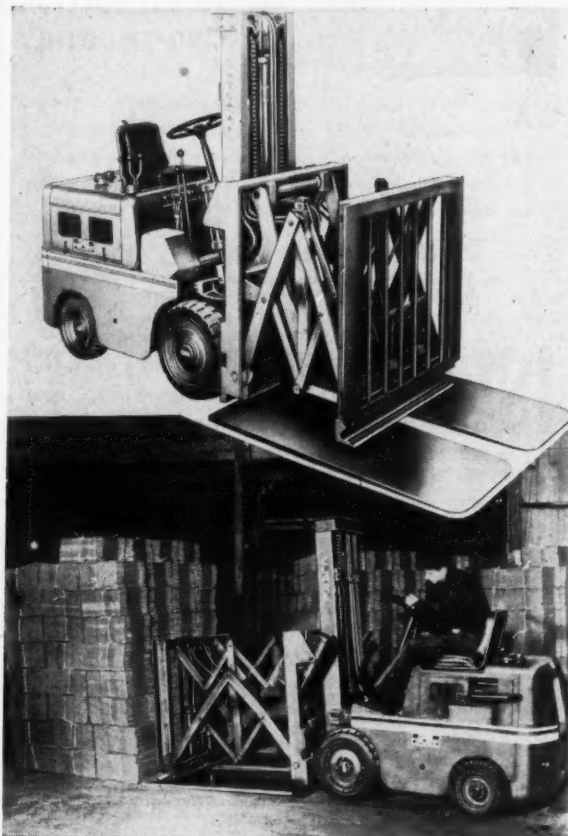


**Loads on carrying sheets
pulled on forks; pushed off
with less stress . . .**

pantograph-type linkage replaces piston rods on fork truck accessory

Uses: Handles unit loads without use of conventional pallets.

Features: Principal change from previous "Pul-Pac" design is adoption of a pantograph-type linkage to actuate gripper-jaw and pusher rack, in place of the long piston rods employed on previous models. This revised construction allows a shorter hydraulic stroke from a more powerful piston and eliminates severe bending



Handling fork truck loads without pallets made easy with truck accessory

stresses to which long pistons were subjected. Strong side forces formerly exerted on long pistons are now absorbed by pantograph, which is ruggedly built to withstand them. There is no restriction on tilt of uprights.

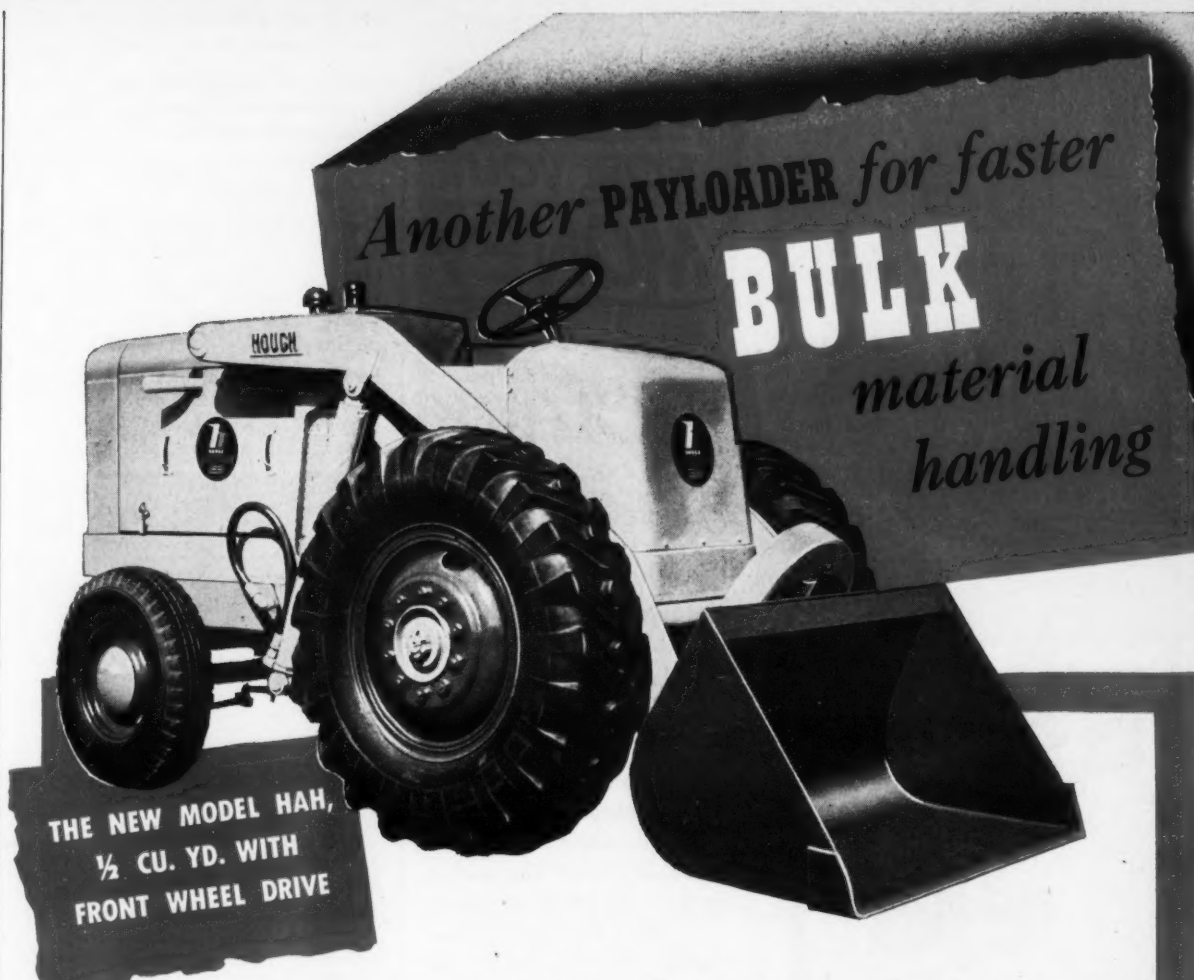
Also, by eliminating all "Pul-Pac" structure back of operator, maximum visibility and safety is provided for operator. In addition, less space is required by this redesigned accessory.

Description: "Pul-Pac" device has a detachable mounting and is interchangeable with standard forks up to 54" usable length.

Rack and gripper-jaw can be lowered slightly when fully extended to engage and grip carrying sheets flat on floor. Mechanism is easily disassembled for service.

Source: "Pul-Pac" is a development of Clark Equipment Co., Industrial Truck Div., Dept. CP, Battle Creek, Mich. . . . or for more information check CP 4424 on handy form, pages 2 and 3.

MAY, 1951



Hough scores again with still another new PAYLOADER. This model HAH, like all other PAYLOADERS, is a complete Hough-designed-and-built tractor and shovel with the same outstanding features and advantages that have established PAYLOADERS as first choice in industry for handling bulk materials.

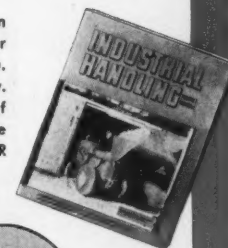
This fast-travelling, short-turning unit can scoop-up a ton of materials and carry it fast over floors or ground, through narrow aisles and up ramps. Precise hydraulic dump control deposits the loads carefully or abruptly at any height up to 91 inches. The Model HAH will also stockpile and windrow materials . . . will lift, lower, and push. It can be depended on to do hard work on a 24-hour-a-day basis and to handle many bulk material moving jobs, with great savings in time, labor and costs.

It has everything in design, efficiency and stamina for which PAYLOADERS are famous and is sold and serviced by Hough Distributors world-wide.

The Frank G. Hough Company, 744 Sunnyside Avenue, Libertyville, Illinois.

- Four forward and four faster reverse speeds up to 23 mph.
- Separate quick-acting forward-reverse shift.
- Full hydraulic control of bucket — lift, dump, close, lower.
- Automatic quick tip-back of bucket.
- Compact, stable and maneuverable.
- Fullest operator visibility.
- Large pneumatic tires.

WRITE for information on the Model HAH or other PAYLOADERS from 12 cu. ft. to 1 1/2 cu. yd. capacity. Also ask for your copy of "Industrial Handling" the magazine of PAYLOADER uses.

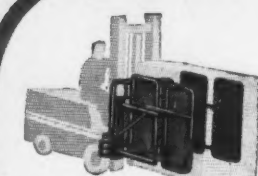


PAYLOADER®

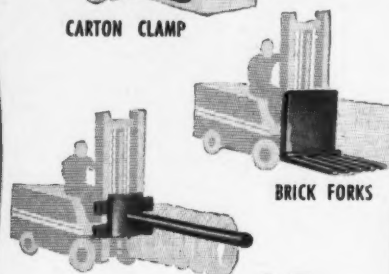
THE FRANK G. HOUGH CO. • Since 1920



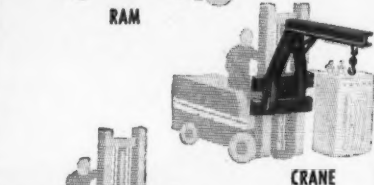
When inquiring check CP 4425 on handy form, pgs. 2-3



CARTON CLAMP



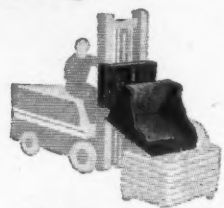
BRICK FORKS



CRANE



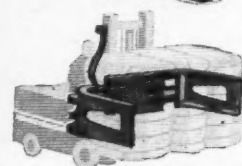
ROTATING DEVICE



SHOVEL



BARTEL DEVICE



CLAMP

MORE FOR YOUR MONEY

.....IN

CLARK Attachments

You employ your fork-lift truck to best advantage by getting the most out of it. CLARK attachments for CLARK fork-lift trucks enable you to do just that.

Interchangeable in most cases with standard forks, these attachments make a fork-truck *many machines in one*—a truck out of which maximum rather than just normal benefits are derived. And all this at a cost so low that it is quickly and painlessly absorbed.

To make the most of your fork-lift trucks—to discover uses for them that might not have occurred to you, check with your CLARK Dealer (he's listed in the Yellow Pages of your telephone book) or fill out the coupon below and send it to us attached to your business letterhead.

CLARK ELECTRIC AND GAS POWERED FORK TRUCKS AND POWERED HAND TRUCKS • INDUSTRIAL TOWING TRACTORS



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AUTHORIZED CLARK INDUSTRIAL TRUCK PARTS AND SERVICE STATIONS IN STRATEGIC LOCATIONS

CLIP THE COUPON

When inquiring check CP 4426 on handy form, pgs. 2-3

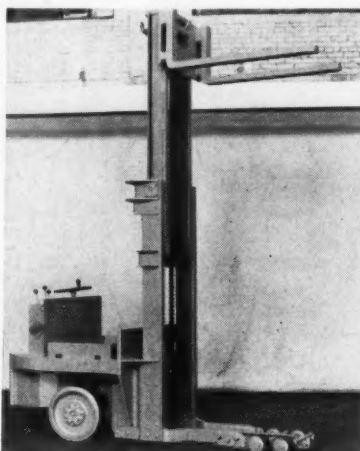
MATERIAL HANDLING

Outrigger substitutes for counterbalancing weight in latest lift truck...

result is high load capacity per truck weight

Uses: Line of electrically powered lift trucks has load carrying capacities ranging from 4,000 to 10,000 pounds. Most applicable where truck weight must be held at minimum.

Features: Substantial reduction in weight of these units, as compared with the weight of conventional fork trucks of equivalent



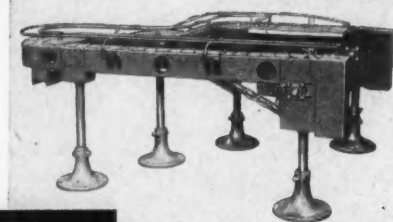
Platform design reduces lift truck weight compared with equivalent capacity units of standard design

capacity, is possible due to the substitution of a load-supporting extension under the elevating mechanism instead of added truck weight for counter-balancing. Result is high capacity per unit weight. The 6000-lb capacity model is actually 2 tons lighter in weight than the standard-design fork truck of same capacity.

Description: Truck is similar to maker's high-lift platform trucks. Load supporting member is attached to the elevating mechanism in the same way as in platform trucks. In place of a platform, two reinforced alloy steel arms or forks extend forward the usual length of a platform. Forward wheels are 6 1/2" diameter, and the arms in lowered position come outside and nearly flush with the top of the wheels.

Arrangement offers low underclearances for skids, compared with 12" generally required for standard platform trucks. For high tiering the truck may be equipped with a fork, the tines of which come below the top level of the wheels. The base tier rests on wood or steel skids only eight inches high, enabling the forward wheels or "roller-out-rigger"

Reduce
Handling
Costs!



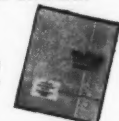
Styl-O-Matic LATERAL CURVE BOTTLE & CONTAINER CONVEYOR

KEEPS PRODUCTION
FLOWING SMOOTHLY

A VERSATILE, economical unit for the food, dairy, beverage, etc. field. Conveys in straight line, around curves (0° to 180°) and up or down normal inclines or declines. Available in steel or stainless steel, with or without pack-off tables. Only one power unit is needed as there are no corner brackets.

WRITE FOR FREE BULLETIN

about this flexible, smooth operating unit that lowers costs and increases production. Ask for Bulletin No. ST-1. Dept. CP5



ISLAND EQUIPMENT CORP.

27-01 Bridge Plaza North
Long Island City 1, N. Y.

When inquiring check CP 4427 on handy form, pgs. 2-3

GIVE YOUR DRUMS, KETTLES, VATS, ETC., THIS *Effective.* *Long-Lasting* PROTECTION



"SNAP-IN" LINERS are readily dropped into place and held there by snapping liner lid over container rim. Lid (rubber lined) is then fastened down with adjustable fasteners, forming a leakproof, rubber-to-rubber seal. Liner can be quickly removed at any time.

GOODALL "SNAP-IN" Loose Rubber Liners are made to fit standard size metal drums, vats, kettles, etc., for lasting protection against acids and chemicals.

You ship just one container to our factory (a big saving over other methods) for use as a pattern. We can then make liners for any number of containers of identical size and shape.

"SNAP-IN" LINERS are custom made, with the high-quality rubber especially compounded to handle the specified product. Tough, durable, pliable. Thousands now in use demonstrate their practicability and economy. Contact Our Nearest Branch for Prices.



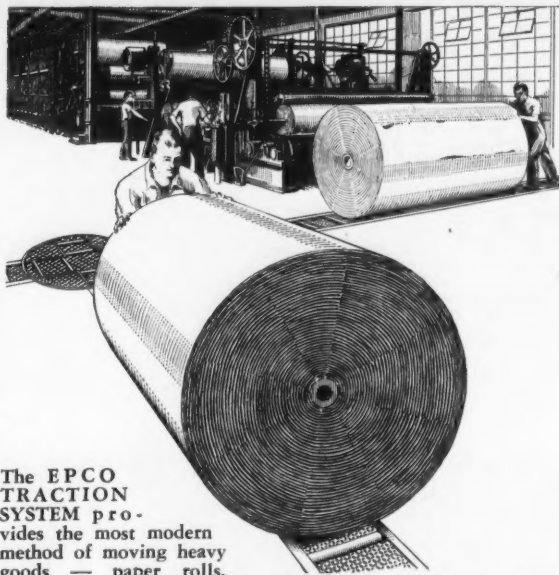
GOODALL RUBBER COMPANY

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Branches: Philadelphia • New York • Boston • Pittsburgh • Chicago • Detroit • St. Paul • Los Angeles
San Francisco • Seattle • Portland • Salt Lake City • Denver • Houston • Distributors in Other Principal Cities

When inquiring check CP 4428 on handy form, pgs. 2-3

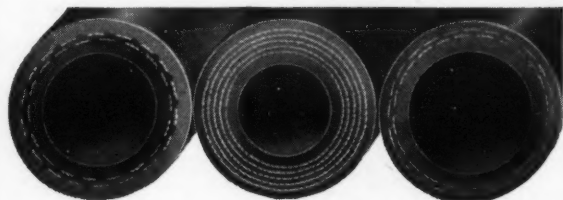
CHEMICAL PROCESSING



The EPCO TRACTION SYSTEM provides the most modern method of moving heavy goods — paper rolls, drums and vats of chemicals. Epcos is now used in more than 100 paper mills and corrugated box plants. EPCO ball-bearing Trackage never requires more than 4" foundation and may be installed in any type of flooring. Hand and power trucks can cross without causing damage to trackage. EPCO system keeps the load on the floor, avoids accidents, saves man hours; replaces caster wheel dollies and eliminates damage to floors.

Let us help plan your layout.
ENGINEERING PRODUCTS CO., Inc.
126 South Michigan Ave., Chicago 3, Ill.

When inquiring check CP 4429 on handy form, pgs. 2-3



AIR HOSE STEAM HOSE WATER HOSE

Buy it RIGHT... from headquarters

Each type of hose must be engineered for the job to stay on the job! That's why Hewitt-Robins industrial hose gives the long, efficient, low-cost service you want.

Hewitt-Robins uses natural and synthetic rubber, cotton, rayon, glass, and chemicals as needed to insure dependable hose service. Resistance to oil, abrasion, moisture, heat, cutting, and weather are built in as conditions of service require. Toughness is combined with flexibility for easy handling.

Get the most for your money. Look up your Hewitt Rubber Distributor under "Rubber Products" in your phone book. Whatever your hose problem, you can be sure he has the right answer. Or write to Hewitt Rubber Division, 240 Kensington Ave., Buffalo 5, N. Y.

Hewitt-Robins is participating in the management and financing of Kentucky Synthetic Rubber Corporation.

HEWITT-ROBINS
AIR-STEAM-WATER
HOSE

When inquiring check CP 4430 on handy form, pgs. 2-3

MAY, 1951

MATERIAL HANDLING

to clear them. Upper tiers are handled on pallets, runners, or cleats in the usual manner of fork trucks.

Source: Development of the Elwell-Parker Electric Company, Dept. CP, Cleveland, Ohio. . . or for more information check CP 4431 on handy form, pages 2 and 3.

Fibre drums, their contents protected equally well by latex coating . . .

minimizes drum damage, resists moisture, chemicals, grease

Uses: Fibre drums, coated with Geon polyvinyl chloride latex, are being used extensively for shipping a host of solid and semi-solid materials such as ion exchange resins, textile sizing, lubricating grease, etc.

Features: Coating protects the product as well as the drum. Resistance to chemical attack, grease,



Geon coating on fibre drums provides protection against moisture transmission, chemical attack, grease, and abrasion

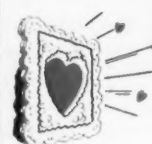
and abrasion, as well as assurance against moisture transmission, are afforded by coating.

Description: Latex may be applied to the interiors or exteriors, or both, of drums. Since the coating penetrates deeply into the fibre, adhesion is good. 'Slick' interior surfaces left on drums minimizes scraping out contents when emptying. Exterior coated surfaces protect drums from mechanical damage.

Source: Fibre drums treated to specification are being manufactured by Virginia Barrel Company, Dept. CP, Chester, Pa. Geon coating material is a product of the B. F. Goodrich Chemical Company, Dept. CP, 324 Rose Bldg., Cleveland 15, Ohio. . . or for more information check CP 4432 on handy form, pages 2 and 3.



PATENTED



Roses are red
Violets are blue
Displays like this
Make sales for you!

Here's a "Valentine" that dealers love—a clever display packed with tempting Valentine candies. It's a combination sure to brighten any youngster's eye. And that's sure to brighten the day's cash register figures! This H & D display is a favorite of manufacturers, too, because it combines a shipping box with an effective point-of-sale display at an over-all saving.

H & D's book, "Pack to Attract" shows dozens of ways better packaging can help you, through better display . . . lower packaging costs . . . increased sales . . .

better product protection. For a copy, write Hinde & Dauch, 5103 Decatur St., Sandusky, Ohio.

H&D



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When inquiring check CP 4433 on handy form, pgs. 2-3

P-S Materials HANDLING EQUIPMENT

CUSTOM BUILT TO MEET
YOUR NEEDS

BARREL and BOX SKID All- Steel

Item
B-470

All steel—welded
construction—light
weight. Will stand
up under the heav-
iest barrel or box.
Skid measures 14"
wide overall.

Combination

TRUCK and DRAIN RACK

Loads Automatically

A dual purpose truck that
can be used to move barrels
or drums and also serve as a
drain rack. Available in two
styles—with or without de-
tachables handles. Sturdy
frame-welded construction.
Weight approximately 90 lbs.

Item NS-506
(Handles welded to frame) \$4675

Item NS-506 DH
(truck complete with
detachable handles) \$4895

Vertical DRUM LIFTER

For handling open and
closed steel drums in
vertical position, by
crane or hoist. All-steel,
with heavily welded
chain. Sure-hold safety
barrel grip. Saves plant
space. Use for either
high or low ceiling con-
dition.

Item
C-465
\$3025
FOR
DETROIT



DRUM and BARREL TILT

Item
B-731
\$18150

A barrel tilt for controlled,
precision dumping or pouring.
Ideal for chemicals, solvents,
powders, etc. Turns 360°
through worm drive. Equipped
with two safety type locking de-
vices and all-steel, welded yoke.
Hand-operated chain drive.



BARREL TRUCK

It Loads Automatically. Three
style wheels: metal, rubber
or metal and pneumatic.
Capacity 1000 lbs. 22" wide
for narrow openings.
Weight 85 lbs.

When Ordering give
item number. Prices
subject to change
without notice.

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Pneumatic
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\$4950



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Molded on
Rubber
Wheels
\$4235

DESIGNED AND MANUFACTURED BY

Palmer Shile Co.

16016 FULLERTON AVENUE • DETROIT 27, MICH.

Material Handling

Large Fiber Drums Made Liquid-tight by Use of Plastic Inner Envelope

55-gallon container for non-flammable liquids has
withstood tests in actual rail, truck shipments

USES: Low-cost, lightweight, leak-
proof containers for economical shipment
of non-flammable, non-corrosive liquids.

Features: Economies effected by this de-
velopment in a non-metallic liquid container
include a lower initial cost and a tare weight
of only 25 lb, 50% to 75% less than that of
alternate shipping containers.

Design achieves overall strength, resistance to
shock and impact, and sealing against leaks
that are required for conditions encountered
in routine shipment over long distances.

Description: Drum has following com-
ponent parts: a 55-gallon "Leverpak" drum
of special construction, with inside dimension
of 2½' diameter and 35" high; a separate
plastic envelope; and a "boot" of flexible
creped duplex kraft paper, extendable about
25% in any direction. This "boot" is placed
between the plastic envelope and the drum
at the bottom, along with a disc of plastic
material like the envelope. Steel head of
drum has a full-round sponge rubber gasket
cemented to it in a groove on the underside.
Function of boot is to protect envelope from
pinching, undue stretching, or other damage
as it rests in bottom and lower portion of the drum.

Sponge rubber gasket presses the disc against that por-
tion of envelope which overlays the top metal chime of



Fiber drum (55 gal); plastic envelope line and its protective
paper boot; plastic sealing disc; drum head; locking ring

drum, effecting a liquid-tight seal, yet allowing it to be
opened and closed many times while fully protecting
contents.

Boot, protecting bottom of envelope, was developed and
adopted as a vital part of the assembly when drop tests
resulted in partial failure that had not resulted in less
rigorous preliminary tests. Final drop tests on a 45°
angle from a 2' height, with the second drop 90° to
180° from the first, indicated need for the boot. Follow-
ing its adoption, succeeding tests did not cause leakage.

Patentee of the FPEB drum assembly (Fiber-Plastic
Envelope-Boot) is E. S. Schneider, materials control
supervisor for Rohm & Haas at Bristol, Pa. Use of
container at present requires shipping permits from one
of four railroad classification committees for rail ship-
ments, and from National Classification Board for truck
shipments.

Extensive rail tests have been made on 3000 of these
drums, each carrying 400 lb of chemical products.

Assistance in developing this drum package was given



Drum does not leak even after second 2' drop on 45°
angle which damaged bottom and side wall

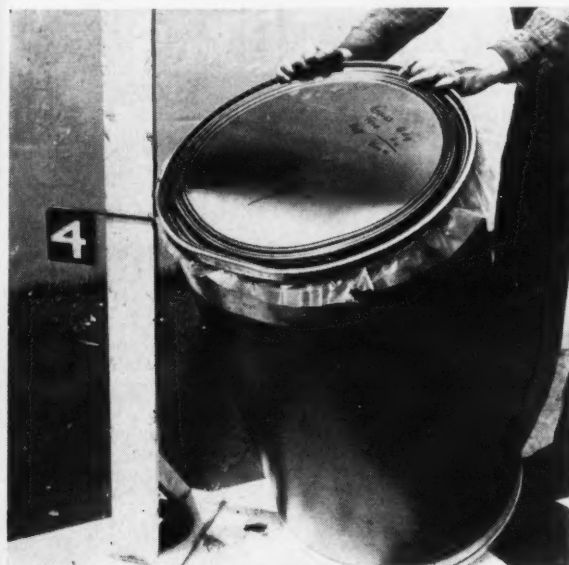
CHEMICAL PROCESSING

When inquiring check CP 4434 on handy form, pgs. 2-3

Page 48

by Continental Can Co. (drums); Visking Corporation (film); Shellmar Products Corp., Kellogg Div. of U. S. Envelope, Hedwin Corp. (conversion of film into envelopes); Cincinnati Industries, Inc. (boots).

Licenses are being granted to responsible companies for manufacture of this container. Rohm & Haas does not



Closure still liquid-tight despite distortion from impact of test drops

make or sell any of the component parts of the drum package, nor is it in a position to furnish samples.

Source: FPEB drum assembly is an invention of E. S. Schneider, Rohm & Haas, Dept. CP, Philadelphia, Pa. . . . or for more information check CP 4435 on handy form, pages 2 and 3.

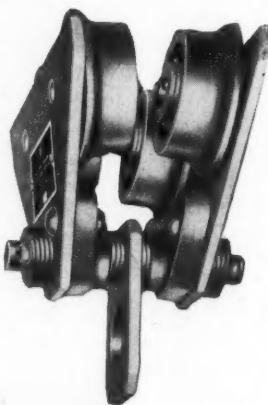
Intends trolleys for use where efficiency, safety factor are not paramount . . .

minimum of 3-to-1 safety factor offered on all sizes

Uses: Trolleys for applications requiring capacities from $\frac{1}{2}$ to 3 tons. For standard I-beam sizes.

Features: New additions to maker's line of Wright-Way trolleys and intended for applications that require neither high efficiency nor as high a factor of safety as other units in this line.

Description: Trolley specifications: chilled tread wheels; husky roller bearings; heavy steel axles, equalizing pin, and becket strap; and heavy fabricated side plates.



Trolleys fit standard I-beams

Factor of safety is a minimum of 3:1 on all sizes.

Source: Wright Hoist Division of American Chain & Cable Company, Inc., Dept. CP, York, Pa., is the maker . . . or for more information check CP 4436 on handy form, pages 2 and 3.

MAY, 1951

CHASE

built to take it! sharkcraft

THE ALL-CRINKLED MULTIWALL BAG

CUTS COSTLY BREAKAGE IN THE PACKAGING OF...

- Farm Products
- Powdered Milk
- Mineral Concentrates
- Seeds • Chemicals
- Pharmaceuticals
- Fertilizers
- Rock Products
- Meat Scraps and Tankage
- Starch Products

Chase Sharkcraft sharply reduces costly breakage . . . it is, indeed, **BUILT TO TAKE IT!** Available in 2 to 5 plies of extra strong crinkled kraft. Furthermore, it provides a sure grip . . . it's easier to handle and stack, and you'll like the sharp, colorful printing of this better container.

Get full details on Chase Sharkcraft from your Chase Salesman—and be sure of the most efficient container for your product. He is supported by more than 100 years of experience in providing better bags for American industry and agriculture.

Bags for All Industry and Agriculture

- cotton bags of all kinds
- Topmill burlap bags
- Saxolin open mesh bags
- paper and Multiwall bags
- combination bags, liners and specialties



Check with your Chase salesman or mail this coupon TODAY!

CHASE BAG COMPANY
309 West Jackson Boulevard
Chicago 6, Illinois

Gentlemen: Please send me more information about SHARKRAFT bags

for the packaging of.....
☐ Have Salesman Call

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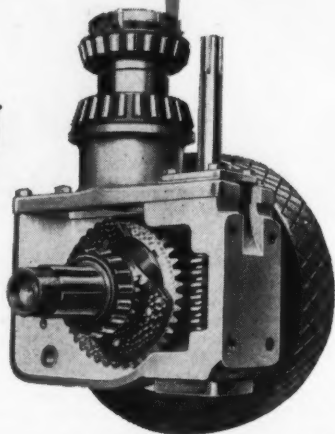
CHASE BAG CO. GENERAL SALES OFFICES: 309 W. JACKSON BLVD., CHICAGO 6, ILL.

BOISE • DALLAS • TOLEDO • DENVER • DETROIT • MEMPHIS • BUFFALO • ST. LOUIS • NEW YORK • CLEVELAND • MILWAUKEE
PITTSBURGH • KANSAS CITY • LOS ANGELES • MINNEAPOLIS • GOSHEN, IND. • PHILADELPHIA • NEW ORLEANS • ORLANDO, FLA. • SALT LAKE CITY
• PORTLAND, ORE. • REIDSVILLE, N. C. • HARLINGEN, TEXAS • CHAGRIN FALLS, O. • WORCESTER, MASS. • CROSSETT, ARK. • SAN FRANCISCO

When inquiring check CP 4437 on handy form, pgs. 2-3

Here's why users get "400% longer life"

*from
Stuebing
Hydroelectrics*



This sealed gear drive cuts 80% off maintenance and downtime!

Sealed in lubricant, this alloy-steel gear drive in the Stuebing Hydroelectric takes the place of old-style drive chains ... actually gives Stuebing walkie trucks a drive comparable to modern automobiles.

Only Stuebing engineered Lift Trucks give you this sealed gear drive plus four-wheel stability, easy steering and twin front driving wheels.

From users came startling reports of increased service life up to "400% and more!" plus astounding savings on repairs and downtime. "No repairs ... no downtime," reports one user. "No maintenance in a year and a half of heavy service," reports another.

You can have these same startling savings on walkie truck costs in your own plant, in addition, of course, to savings up to 80% on handling costs. Let us show you! Write for Bulletin H.



1071 STANDARD MODELS AVAILABLE

Lift Trucks Incorporated

2425 Spring Grove Avenue Cincinnati 14, Ohio

When inquiring check CP 4438 on handy form, pgs. 2-3

MATERIAL HANDLING

Human hand and arm dexterity achieved by truck attachment in picking up cylinders . . .

designed for handling artillery shells, can be used to move and rotate loads up to 500 lb

Uses: Device was originally designed for handling artillery shells. Application in picking up and moving articles of similar shape and weight is indicated.

Features: Attachment is easily removable so that it can be used interchangeably with standard pallet forks.

Description: Attachment grasps, lifts, and rotates cylinders and places them in presses, furnaces, racks, or in other areas as required. It consists of a rotating



Clamp can grasp cylinders from 4 to 10" in diameter device with a ram 60" long. Hydraulic clamp at outer end provides from 2 to 12" clamp action to handle from 4 to 10" diameter cylinders weighing up to 500 lb. 90° of rotation is provided so that cylinders may be placed in either vertical or horizontal position.

Source: The Baker Industrial Truck Div., The Baker-Raulang Co., Dept. CP, 1250 West 80th St., Cleveland 2, Ohio . . . or for more information check CP 4439 on handy form, pages 2 and 3.

Guide to material handling gives case histories

All aspects of material handling are covered in 440-page, 8 1/2 x 11" book. Practices that have been used by 145 different companies to meet specific problems are given; in all, 190 different approaches.

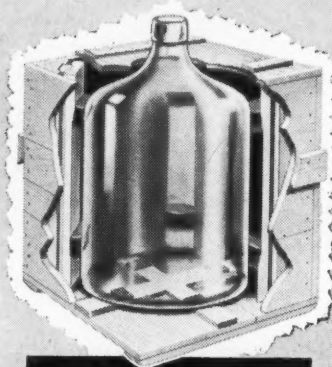
For quick and easy use, articles are arranged in chapters according to where in the plant the problem exists. Book moves logically from case studies covering material handling in receiving and shipping, machine lines, production, and finishing operations to those covering material handling on assembly lines, in packaging, storage, and out in the yard. Each case study is fully indexed by kind of equipment used, kind of product handled, and company name.

Editors Lewis K. Urquhart and Carroll W. Boyce frankly admit in their preface that every installation described is not the "last word" in handling — no handling job is so good that it cannot be improved. However, some sections of the book have permanent value, regardless of improved conditions or equipment. Among these are sections clearly telling how to approach the problem of

HERCULES CARBOY BOXES

give you EXTRA PROTECTION

These sturdy all wood boxes, with interchangeable cork (Hercules) or rubber cushion (Aero) inserts, give all point protection and reduce bottle breakage. They're easy to handle, eliminate the need for foreign filler materials, and reduce occupational hazards.



13 GALLONS

SPECIFICATIONS

SIZE: 17 1/2" x 17 1/2" x 22" (I.D.)

WEIGHT: Approx. 45 lbs. without bottle.

CARBOY: 13 Gallons.

Available also in 5 gallon, 6 1/2 gallon and other capacities.

COMPLIES WITH CLASSIFICATION
I.C.C. I-A.

For
Information
write to
Dept. P

PROMPT
DELIVERY

NATIONAL BOX & LUMBER COMPANY

NEWARK 5, NEW JERSEY



When inquiring check CP 4440
on handy form, pgs. 2-3

CHEMICAL PROCESSING

MATERIAL HANDLING

setting up a handling system, how to evaluate systems and actual costs saved, and how to convince key personnel of the value of material handling systems.

Of special interest and value are the many photographs and flow sheets contained. Pictures are carefully arranged and captioned, and practically tell the story by themselves without duplicating text. Flow sheets are large and have been stripped of non-essentials for clarity. To obtain "Materials Handling Case Book", remit \$8 direct to McGraw-Hill Book Co., Inc., Dept. CP, 330 W. 42nd St., New York 18, N. Y.

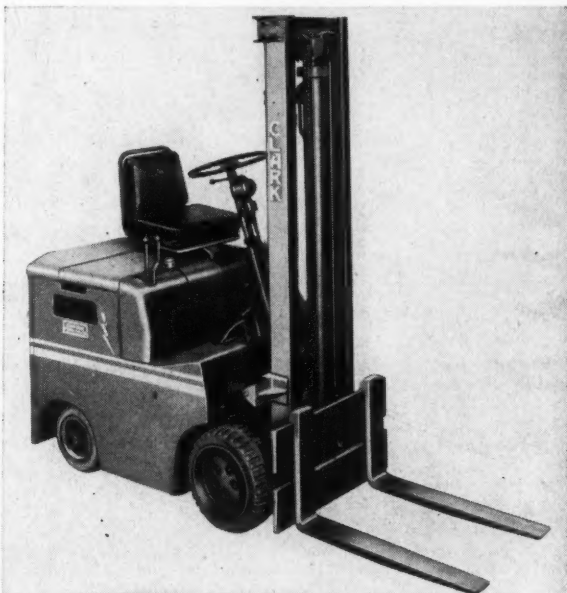
Shifting of truck gears timed to torque requirements . . .

no jerking; possibility of "human error" avoided; half ton loads moved at greater speeds

Uses: Handles loads up to 2,000 lb at 24" load center.

Features: "Fingertip" directional control lever is mounted on steering column for selection of direction of travel and simultaneous engagement of first point of power. This greatly simplifies operation, increases maneuvering speed and permits fast getaway.

Also included are "deadman" safety control, pivoted mounted steering axle and cushion style tires as standard equipment. Automatic acceleration contributes to elimination of jerking and possibility of "human error." Shifts



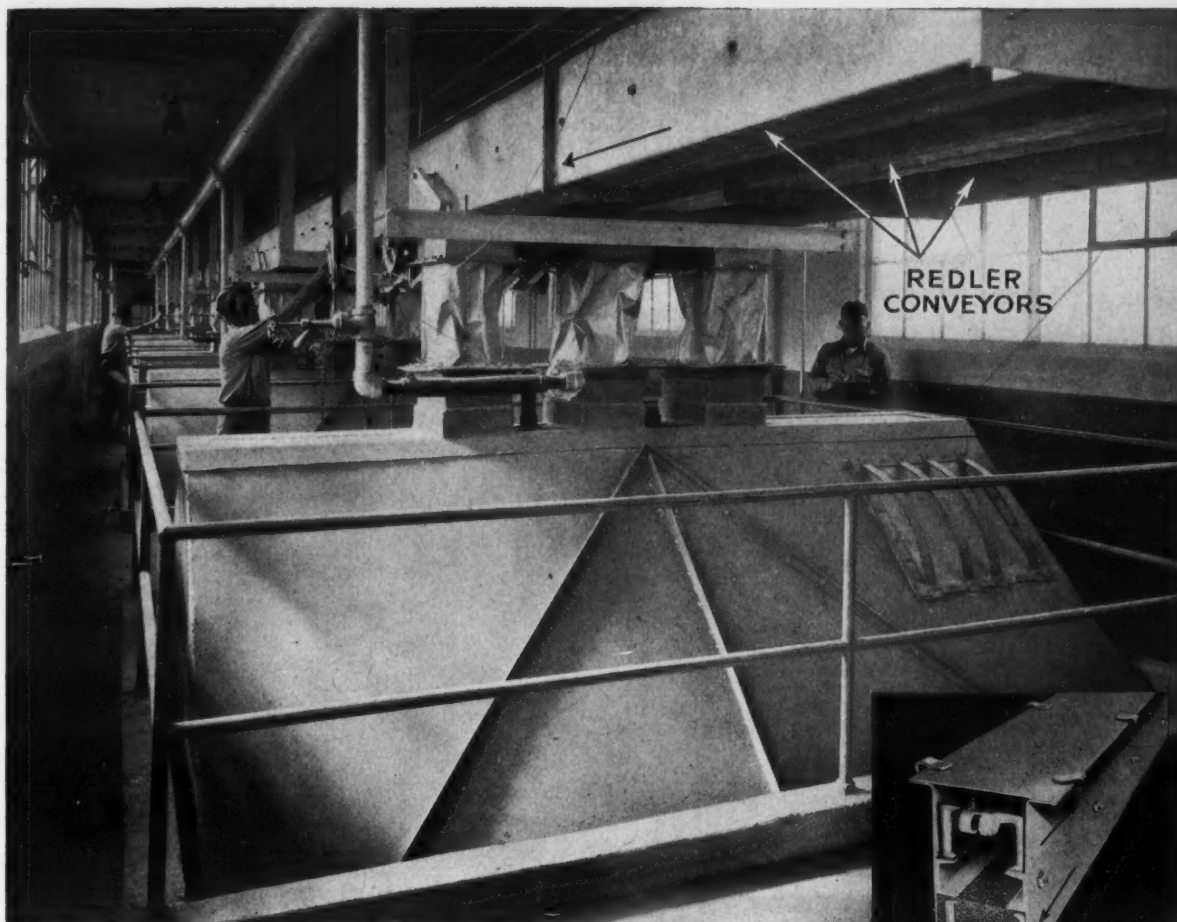
Electric fork truck has automatic acceleration

from one point of power to another are timed automatically in accordance with torque requirements.

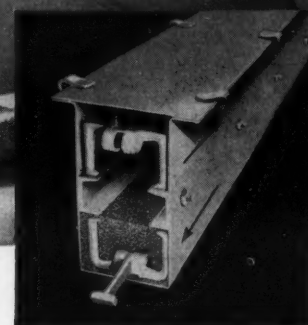
Description: Dimensions are: overall length, less fork — 63-5/8"; overall width — 34-1/2" wheelbase — 37"; turning radius — 61-1/2"; minimum intersecting aisles, 57". Overall height of standard uprights with forks down — 83"; at 124" maximum lift — 142". Other uprights and tiering available.

Source: Clipper electric fork-lift truck is built by Clark Equipment Co., Industrial Truck Div., Dept. CP, Battle Creek, Mich. . . . or for more information check CP 4441 on handy form, pages 2 and 3.

MAY 1951



REDLER CONVEYORS



Cross section of standard Redler casing shows material moving in lower run—flights returning, circuit-fashion, in upper.

REDLER Conveyors Move Cellulose Acetate with **SPEED** and **SAFETY**

Fast, safe movement, without contamination or spillage, at the lowest cost per ton is the achievement of this REDLER Conveyor System designed and installed by S-A. Automatic remote control operates the system, giving fast, convenient handling with maximum safety and economy. The logical, economical solution of problems such as this has been the continuous record of S-A engineers for fifty years. This half-century, bulk-materials-handling experience can be applied with great advantage to your own material movement questions.

S-A engineers will gladly consult with you, without obligation, but *with* the kind of experienced, versatile *know-how* that finds the right answers.

50 years experience **STEPHEN S-ADAMSON** with bulk handling

11 Ridgeway Avenue, Aurora, Illinois MFG. CO. - Los Angeles, Calif. • Belleville, Ontario

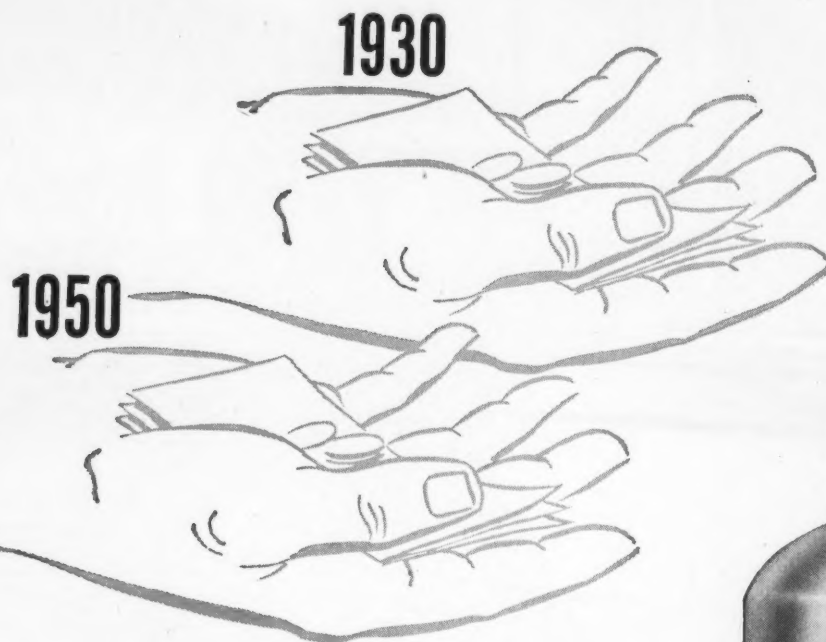
TENNESSEE EASTMAN COMPANY
Kingsport, Tennessee

Three horizontal REDLER Conveyors mounted overhead in parallel positions convey cellulose acetate from storage to weigh bins. Discharge outlets, gate-controlled, permit placing material in any selected bin. Bins discharge into mixers on floor below. Acetate flake dissolves to viscous solution from which "Eastman Acetate Yarn" and "Eastman Acetate Staple" are made. Material moved within enclosed casing of REDLERS is protected against contamination and spillage.

DESIGNERS AND MANUFACTURERS OF ALL TYPES OF BULK MATERIALS HANDLING EQUIPMENT

When inquiring check CP 4442 on handy form, pgs. 2-3

HACKNEY LIGHTWEIGHT CYLINDERS



it costs **NO** more to ship

150 lbs. of anhydrous ammonia today than in 1930...even though freight rates are up 41%!

Hackney Lightweight Cylinders offset higher freight rates for many products. These facts about anhydrous ammonia shipments illustrate possible savings to all compressed gas manufacturers.

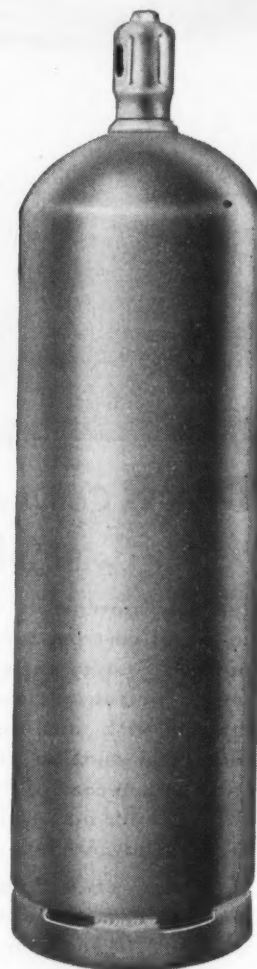
In 1930, it cost a shipper \$4.64 to send 150 lbs. of anhydrous ammonia from St. Louis to Dallas. Freight rates for carload shipments were low (\$1.16 per 100 lbs.), the cylinder was heavy (250 lbs.).

In 1950, it cost a shipper \$4.65 to send 150 lbs. of anhydrous ammonia from St. Louis to Dallas. Freight rates are higher (\$1.63 per 100 lbs.), but the cylinder is lighter (135 lbs.).

Not only that... it costs about 25% less to return the empty cylinder today, a definite economy.

Hackney Lightweight Cylinders, fabricated from high strength steels, give you cost-saving light weight, with no sacrifice in strength. The Hackney Deep Drawing Process assures uniform sidewall thickness and eliminates all excess weight.

If you're still using old, bulky, hard-to-handle cylinders, change to lightweight Hackney Cylinders. It's the way to shipping and handling economies. Write us for further information.



MATERIAL HANDLING

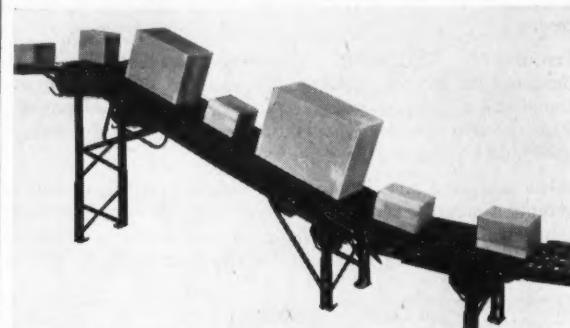
Packages transferred smoothly from level to inclined belt conveyors . . .

feeder unit 30" long easily attached to inclined conveyors; drives from conveyor take-up pulley

Uses: Transfers many types of packages from level to inclined conveyors, and vice-versa.

Features: Connecting to end of maker's portable units, it adds to their usefulness by handling very short or long articles that might not transfer smoothly from gravity feeders. Pitch of power feeder need not be adjusted when direction of flow is reversed. This saves set-up time when receiving and shipping are handled on same conveyor line.

Description: Made in two widths to fit 10" and 16" belt width units. Standard overall length of feeder is 30", with longer models available to fit special handling



Power feeder connects to inclined conveyor

problems. A slotted connector bar allows feeder to be hooked to gravity wheel conveyor for line use. Power feeder is chain driven from take-up pulley in main conveyor frame. Entire drive assembly is enclosed for safety. Take-up slides with screw adjustment provide an easy way to keep the belt aligned and at proper tension. The 4" diameter welded-steel drive pulley, lagged for belt traction, is fitted with self-aligning pressure-lubricated ball bearings.

Source: Power feeder for "Floor-Veyor, Jr." inclined power belt conveyors is built by The Rapids-Standard Co., Inc., Dept. CP, Grand Rapids, Mich. . . . or for more information, check CP 4444 on handy form, pages 2 and 3.

Turning radius very short in proportion to capacity, size of tractor shovel . . .

front drive unit maneuvers easily; has four speeds forward or reverse; capacity 1/2 cu yd

Uses: Picks-up, moves, and dumps loads amounting to 1/2 cu yd.

Features: Speedy and easy forward to reverse motion is provided by a separate directional shift independent of regular shift. Rear wheel steering and compact short wheelbase design contribute to ease maneuverability for a machine of this size.

Description: Drive is from front wheels with a top speed of 14 mph. Transmission is full reversing with four forward and four corresponding but faster reverse speeds, highest being 23 mph. Service brakes are hydraulic type. Lifting, lowering, dumping and closing of bucket are accomplished by hydraulic rams. Maxi-



PRESSED STEEL TANK COMPANY

Manufacturer of Hackney Products

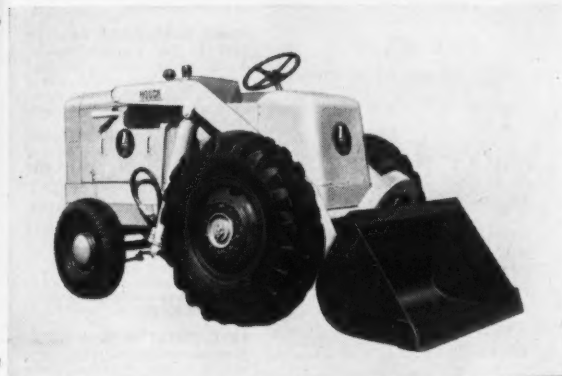
1463 S. 66th St., Milwaukee 14
1387 Vanderbilt Concourse Bldg., New York 17
235 Hanna Bldg., Cleveland 15

936 W. Peachtree St., N.W., Room 126, Atlanta 3
208 S. LaSalle St., Room 796, Chicago 4
568 Roosevelt Bldg., Los Angeles 14

CONTAINERS FOR GASES, LIQUIDS AND SOLIDS

When inquiring check CP 4443 on handy form, pgs. 2-3

CHEMICAL PROCESSING



Front drive, 1/2 cu yd tractor shovel

imum dumping clearance of 71 1/2' permits high loading, but loads can be dumped at any point on the lift and at either slow or fast speed.

Source: Model HAH shovel is built by Frank G. Hough Co., Dept. CP, 820 Seventh St., Libertyville, Ill. . . . or for more information check CP 4445 on handy form, pages 2 and 3.

Bucket, forks interchangeable on lift truck for handling bulk or unitized loads . . .

either can be fitted to truck in a matter of minutes

Uses: Bucket accessory is now fitted as original equipment on maker's "Hi-Duty" lift trucks, making it possible to handle bulk materials. Capacity is 9 cu ft.

Features: Accessory can be detached from truck in a matter of minutes and replaced with lift forks, making



Bucket-equipped lift truck

the truck serve two essential purposes. Bucket has flared sides and lip to facilitate clean-up along walls and in corners.

Description: "Power Bucket" accessory is controlled by hydraulic cylinders that eliminate shock in dumping. Bucket can be opened or closed at any desired height up to 7'10" on a 9' mast which will permit over-the-side loading of dump trucks.

Source: Hi-Duty lift trucks are a development of the Transitier Truck Company, Dept. CP, Portland, Ore. . . . or for more information check CP 4446 on handy form, pages 2 and 3.

MAY, 1951



the STAR OF THE SHOW!

many new features—

Now! Mass Handling gets a shot in the arm! Man power gets a big boost in productive efficiency. Towmotor, always the leader, has developed a new line of fork lift trucks that were the hit of the show. This new series includes pneumatic, cushion, and solid tire units, and offers many new engineering refinements to all types of industry to help speed production and cut handling costs. If you did not see this outstanding line of trucks at the 4th National Materials Handling Exposition, write today for a copy of the new brochure, "The Star of the Show."



- ★ Extra heavy duty frame
- ★ Drop forge beam steering axle
- ★ Full vision instrument panel
- ★ Functionally styled cowl
- ★ Precision controls in easy reach
- ★ Heavy duty hydraulic brakes
- ★ Universal joint
- ★ Precision mast construction
- ★ Super-strength forks
- ★ Engineered tire equipment
- ★ One-piece drive axle assembly
- ★ Maximum free lift
- ★ Automotive-type steering gear
- ★ Hoist cylinder trunnion mounted
- ★ Maximum operating comfort
- ★ All-rubber engine mounts
- ★ Heavy, industrial-type engines
- ★ Forced feed lubrication

AT LEFT: The Model 480-P with pneumatic tires is only one of the new line of trucks that incorporate many NEW engineering features.

CLIP THE COUPON and send today for descriptive information on this outstanding new line of trucks. There is a model to help you with your handling jobs.

TOWMOTOR

THE ONE-MAN-GANG

FORK LIFT TRUCKS and TRACTORS

RECEIVING • PROCESSING • STORAGE • DISTRIBUTION



HOW MANY PEOPLE HAVE YOU TALKED TO ABOUT AMERICANISM TODAY?

TOWMOTOR CORPORATION

Div. 23, 1226 E. 152nd St.

Cleveland 10, Ohio

Send me the Brochure: "The Star of the Show."

Name _____

Company _____

Address _____

City _____ State _____

When inquiring check CP 4447 on handy form, pgs. 2-3



THE CONVEYOR THAT REVOLUTIONIZED FOOD and CHEMICAL HANDLING!



Hapman CONVEYORS FOR FLOWABLE MATERIALS ...WET OR DRY

Sanitary, self-cleaning, totally enclosed — the Hapman Conveyor will handle any flowable material with greater efficiency and with low operating and maintenance cost. Materials may be fed into one or more loading hoppers and transported in vertical, horizontal or inclined planes and around corners, with discharge at one or more points. Clearance and support requirements are minimum. Dust, vapor and moisture tight. Exposure to harmful atmospheric conditions are avoided. Typical of the highly successful applications of the Hapman Conveyor in the food and chemical field is the food products handling system in a large west coast plant, shown above.

Investigate the many advantages of Hapman Conveyors — write today for catalog giving details of construction and applications.



Hapman CONVEYORS, INC.
DIVISION HAPMAN-DUTTON COMPANY
KALAMAZOO MICHIGAN

When inquiring check CP 4448 on handy form, pgs. 2-3

MATERIAL HANDLING

Belt damage from roving reduced without use of guide rolls . . .

idler's counterbalancing action and sensitivity return belt to center position

Uses: For general belt conveyor applications. Sensitive maintains an equilibrium at the center of the roll. Action is equally effective with horizontal, inclined, or declined conveyors, and is unaffected by build-up of material on roll.

Features: Most belt damage from roving occurs at the edge of the return run, where the belt is closely confined between the frame and supports . . . and where it is usually out of sight, difficult to observe. It is important that the belt be centered entering the tail pulley, to insure central loading on the carrying run. This idler greatly reduces possibility of belt damage



Belt idler tilts 45° in direction of return travel

from roving because it provides automatic alignment for the return run of the belt without the use of guide rolls. It is mounted on a roller-bearing turn table with the entire assembly tilted 45° in the direction of return belt travel. Lateral movement of the belt to one side moves that side of the roll forward, and because of the tilt downward, belt pressure on that side decreases. At the same time the opposite side of the roll moves back and upward, increasing belt pressure on that side. Through this counterbalancing action, belt automatically returns to its central position. The idler sensitively maintains an equilibrium at the center of the roll.

Description: It is recommended that these self-aligning return idlers be located to include one unit close to the head pulley (to immediately center the return run), one unit close to the tail pulley (to center the belt for loading), and additional units at ten to fifteen normal return idler spacings, as conditions warrant. Each idler is equipped for high pressure greasing with hydraulic fitting as standard. It can be supplied with 4, 5, or 6" diameter steel rolls, and also with a 5½" diameter rubber-covered spiral roll.

Source: 33RA idlers are made by Chain Belt Co., Dept. CP, 1600 West Bruce St., Milwaukee 4, Wis. . . or for more information check CP 4449 on handy form, pages 2 and 3.

Form conveyor rollers in "V" to move projectiles or other cylindrical units . . .

loads may be rolled over guard rail, eliminating lifting operation; rollers snap-out to be reversed

Uses: Designed to convey projectiles or other cylindrical products.

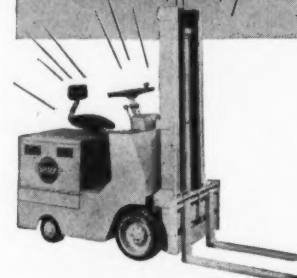
Features: Rollers are easily snapped out and reversed, should they become worn in one area. Project-

Once Again BAKER Makes
Industrial Truck History!

THE NEW BAKER TYPE FS

2000 pound FORK TRUCK

This Rugged ALL NEW 2000 pound capacity FORK TRUCK combines OUTSTANDING DEPENDABLE PERFORMANCE with LOW FIRST COST, LOW OPERATING COST and MINIMUM MAINTENANCE!



BAKER INDUSTRIAL TRUCK DIVISION of The Baker-Rauland Company
1221 WEST 80th STREET CLEVELAND 2, OHIO

Baker INDUSTRIAL TRUCKS

When inquiring check CP 4450 on handy form, pgs. 2-3

Molded On Rubber Tired Wheels

Pneumatic & Semi-Pneumatic Casters

Swivel Casters

Stem Plate Casters

Cone Stem Swivel Casters

Semi-Steel Wheels

Extra Heavy Duty Wheels

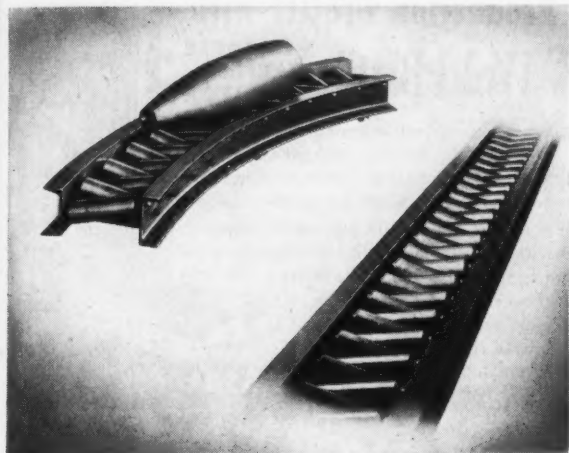
"Resonite" Wheels

Solid Rubber Wheels

Pneumatic and Cushion Wheels

THOMAS TRUCK & CASTER CO.
118 MISSISSIPPI RIVER
KEOKUK, IOWA

When inquiring check CP 4451 on handy form, pgs. 2-3



Rollers can be snapped out and reversed when worn tiles and other cylindrical loads can be taken off conveyor by rolling them over guard rail, eliminating lifting operations.

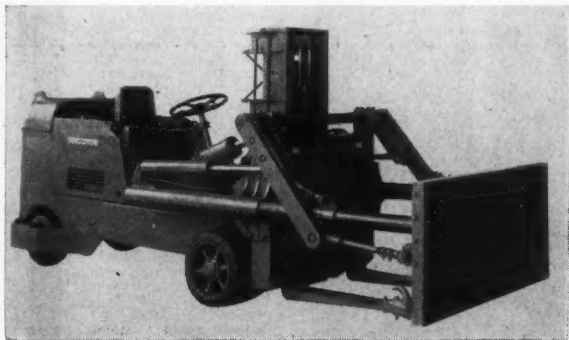
Description: Made in standard 10' sections and 90° curves. They can be converted for handling normal peacetime products.

Source: V-type gravity conveyors are built by Lamson Corp., Dept. CP, Syracuse, N. Y. . . or for more information check CP 4452 on handy form, pages 2 and 3.

Unloader accessory on fork truck speeds handling of dies . . .

Uses: For handling heavy dies and transporting them to and from the die table of a press. Also suitable for handling and positioning of heavy jigs and fixtures.

Features: Unloader accessory shown here is attached to maker's Model LT-90 lift truck. A die is lifted and



Pusher accessory on fork truck for handling heavy dies and jigs

transported with the pusher plate retracted, and is unloaded onto the die table by simply extending the plate to the position shown. To pick up the die from the table, a chain is passed around the die and linked to the hooks at each side of the pusher plate. When the plate is retracted, the die is pulled onto the lift truck forks.

Description: Additional information on Unloader accessory is available in literature offered by maker.

Source: Towmotor Corporation, Dept. CP, 1226 E. 152nd St., Cleveland 10, Ohio . . . or for more information check CP 4453 on handy form, pages 2 and 3.

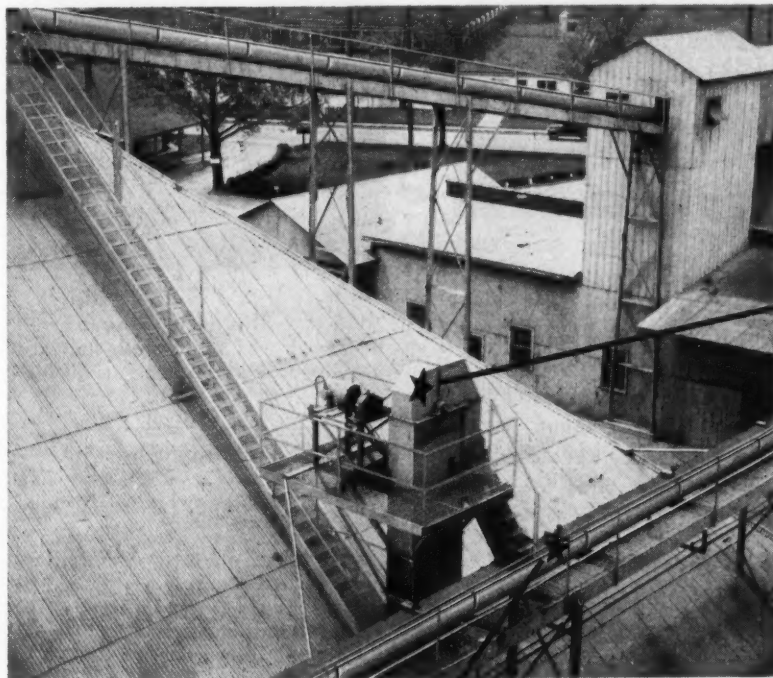
Industry's **BEST SOURCE** for Bucket Elevators and Screw Conveyors

LINK-BELT offers you the most diversified line of both . . . plus wide engineering experience

Get the right bucket elevators and screw conveyors for your requirements. Actually, it may be simpler than you think. For, whether your material is sticky . . . friable . . . hot . . . or abrasive—there's a Link-Belt design to move it with the highest possible efficiency.

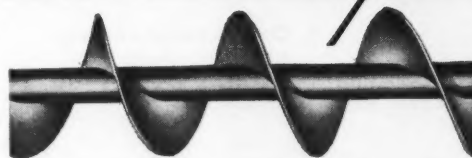
Link-Belt builds many types and sizes of enclosed conveying equipment—the *widest range* of bucket elevators, screw conveyors and Bulk-Flo elevator-conveyors. And all are accurately made to assure smooth operation, long life.

Take advantage of Link-Belt's quality line and materials handling experience. Our engineers will be glad to help you come up with the right answers to your conveying and elevating needs.



Continuous bucket elevator delivers high capacities at lower speeds. Ideal for friable materials.

Two Link-Belt Screw Conveyors and a Link-Belt Bucket Elevator move large volumes of cottonseed at an Illinois oil mill.



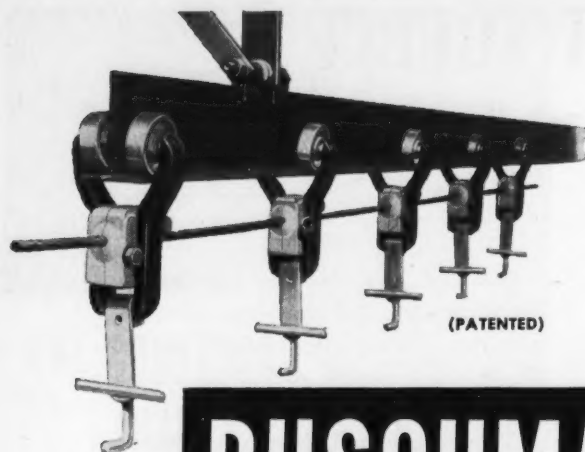
Helicoid or sectional conveyor screws—for general screw conveyor applications—may also be furnished in the metal and finish best suited to your purpose and with components selected from the most complete line.

LINK-BELT

BUCKET ELEVATORS and SCREW CONVEYORS

LINK-BELT COMPANY: Chicago 8, Indianapolis 6, Philadelphia 40, Atlanta, Houston 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8, Springs (South Africa). Offices in principal cities.

When inquiring check CP 4454 on handy form, pgs. 2-3

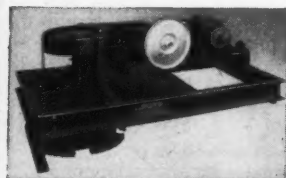


BUSCHMAN OVERHEAD CABLE CONVEYORS

- IMMEDIATELY AVAILABLE
- EASILY ERECTED
- MADE TO ORDER
INSTALLATIONS
FROM STOCK PARTS

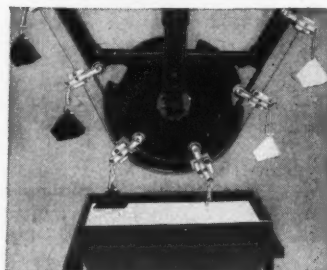
BUSCHMAN Pat-
ented Trolley is
one of many well-
designed features
of "Universal"
Cable Conveyors.

BUSCHMAN Cable Conveyors have been specifically de-
signed for the light and medium loads. Installation and
maintenance costs are reduced from 10% to 30% over
comparable chain conveyor installations. Made to order
installations are easily erected from standard stock parts.
These units have a high safety factor, small power require-
ments, low working pull, and are time and space savers.
Standard units are carried in stock at Cincinnati. Write for
details today.



DRIVES

Drive Units of 50, 250, and 500 lb.
pulling capacity are standard. Total
load carried can be as much as 30
times the drive ratings.



QUICK VERTICAL DIPS

A BUSCHMAN exclusive. Shortest
possible dip. Has dozens of plant
applications besides paint tank ap-
plication shown above.

PRODUCE MORE... FOR LESS
on
Buschman
Conveyors

THE E. W. BUSCHMAN CO., INC.

Spring Grove & Clifton
CINCINNATI 32, OHIO

When inquiring check CP 4455 on handy form, pgs. 2-3

MATERIAL HANDLING

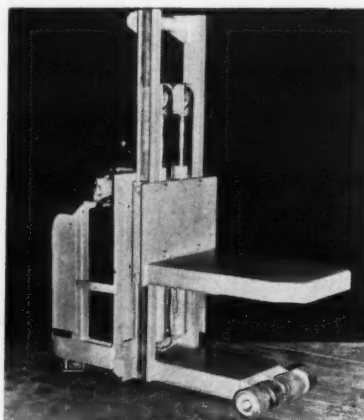
Line of trucks now
includes one for
4000 lb...

equals smaller capacity models
in stacking from narrow aisles

Uses: Stacking and tiering skids.

Features: Maker's line of "Space-
Maker" trucks has been expanded by
introduction of this higher-capacity
(4000 lb) model. It retains main
feature of its predecessors, i.e., it
can right-angle-stack from aisles only
24" wider than load length.

Description: The new model is
available with a standard 24" wide
platform with lengths ranging from



Has 4000-lb capacity

30 to 48". It is offered with lowered
height of 7 or 11". With standard
83" mast, 58" elevation can be fur-
nished.

Four rubber-tired wheels support
load. Tractor is equipped with 10"
drive wheel and two 7" stabilizing
wheels mounted on spring-suspended
swivel caster.

Source: Product of LYON-Ray-
mond Corporation, Dept. CP, 63-79
Madison St., Greene, N. Y. . . or for
more information check CP 4456 on
handy form, pages 2 and 3.

Covers roller chains, allied products

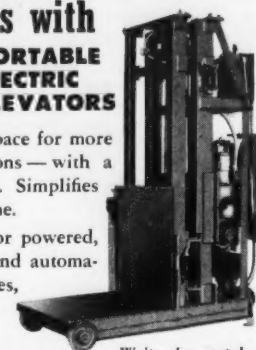
Complete specifications and engineer-
ing reference tables on American
standard roller chains, sprockets, and
attachments are contained in con-
venient catalog. Dimensional data,
strengths, and weights are also sup-
plied for such allied products as block
chain, cable chain, and flexible cou-
plings.

Catalog RS-50 is issued by Whitney
Chain Company, Dept. CP, Hartford,
Conn. When inquiring specify CP
4457 on handy form, pages 2 and 3.

Turn Storage Space into Production Profits with "Weld-Bilt" PORTABLE ELECTRIC ELEVATORS

You'll release valuable floor space for more
profitable production operations — with a
WELD-BILT Portable Elevator. Simplifies
handling, saves labor and time.

Easily moved, electric motor powered,
with convenient push-button and automa-
tic top-and-bottom limit switches,
these elevators are available in
single, double telescopic or
hinged types. Capacities,
500 to 4000 lbs.



Write for catalog
and suggestions.

"Weld-Bilt"
PRODUCTS
WEST BEND EQUIPMENT CORP., WEST BEND, WIS.

Pallet
Lift Trucks

Single
Stroke
Lift
Trucks

Hydraulic
Lift Trucks

Two-Wheel
Trucks

Skid
Platforms

Spring-Bearing
Platform Trucks

WEST BEND EQUIPMENT CORP.
MATERIALS HANDLING ENGINEERS
319 Water Street, West Bend, Wisconsin

When inquiring check CP 4458 on handy form, pgs. 2-3

HAMMOND Screw-Lift elevating STEEPED BARLEY into Germinating Room



12 inch Type "F" Screw-Lift capacity
2500 cu. ft. per hour, elevating barley
from steep tanks to overhead S-screw
Conveyors in Wisconsin Malt House.

Here is another ex-
ample of Screw-Lift ef-
ficiency — handling
Barley from 20 steeping
tanks and feeding it in-
to Screw Conveyors
which deliver it to the
germinating compart-
ment. This operation
called for compactness,
cleanliness plus careful
handling and Screw-Lift
was the answer.

Users comment, "We
are proud of this in-
stallation — it is quiet,
requiring very little
maintenance and takes
up very little space."

You too can use Screw-
Lifts to advantage ele-
vating or recirculating
any free flowing bulk
material — Lift to any
practical height without
contamination or expo-
sure. Six types avail-
able for capacities from
75 to 2500 cu. ft. per
hour.

Write us outlining your
problem or ask for Form
M-500-2

Screw Conveyor Corporation
699 HOFFMAN ST. HAMMOND, IND.
TRADE MARK REG. U.S. PAT. OFF.

When inquiring check CP 4459 on handy form, pgs. 2-3

CHEMICAL PROCESSING

MATERIAL HANDLING

Conveyor guard rails prevent contacts that make sparks . . .

loads cannot strike against steel frame while moving

Uses: For service in plants where fumes and dusts involve explosive hazards.

Features: Conveyor frame is of steel, with hard maple rollers and hard maple side guards. Guards extend approximately an inch beyond the steel frame and over the ends of the rollers. Materials cannot strike the steel frame and cause sparks.

Description: Rollers have hexagon shafts equipped with ball bearings. Brass ferrules are provided at the ends of each roller to prevent splitting. Casters are of heavy duty type with ball bearing wheels and ball bearing swivels. Wheels have rubber tires. Frame and roller dimension can be varied to meet specific requirements.



Spark-proof conveyor

These spark-proof conveyors are also furnished with fixed supports for permanent installations.

Source: Samuel Olson Mfg. Co., Dept. CP, 2418-22 Bloomingdale Ave., Chicago 47, Ill. . . or for more information check CP 4460 on handy form, pages 2 and 3.

Hydraulic hoisting system in electric fork truck lifts 6000 pounds . . .

pump for hoist and tilt is direct-connected to motor independent of truck's travel motor

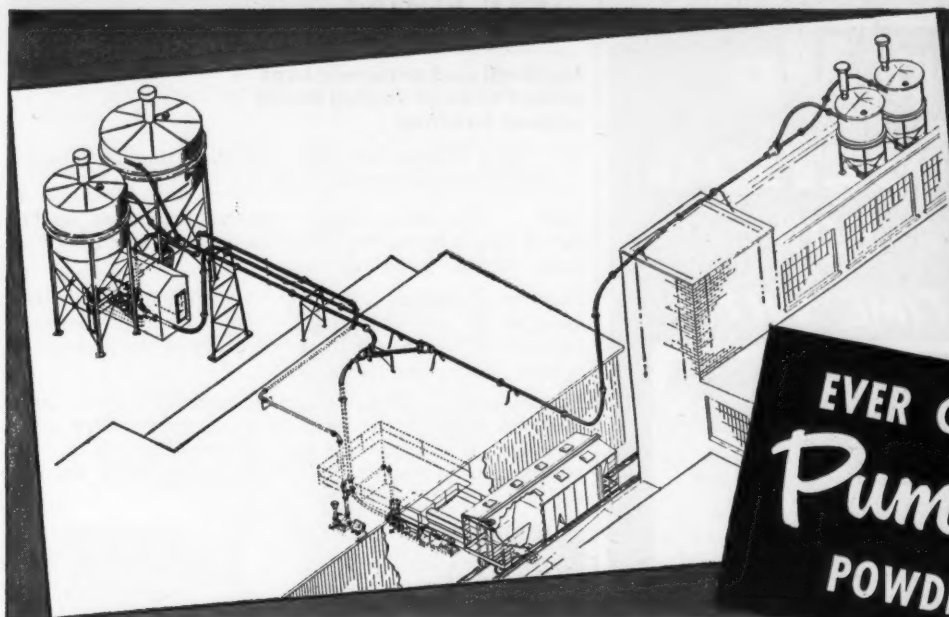


Truck lifts loads 126 inches

is 20 fpm going up, 40 going down; without load, 40 fpm going up, 36 going down. Travel speed with full load is 5 mph. Hydraulic pump for hoist and tilt is direct-connected to an electric motor, independent of travel motor.

Source: 6000-lb electric fork truck is made by The Elwell-Parker Electric Company, Dept. CP, Cleveland, O. . . or for more information check CP 4461 on handy form, pages 2 and 3.

MAY, 1951



You Can With the FULLER-KINYON System!

Pulverized dry materials . . . like starch, cement, lime, powdered coal, fly ash or the like . . . have a unique characteristic. When they're aerated, they act like a liquid. Under pressure, they literally flow from one location to another . . . can be piped and distributed at will to bins in any part of a plant.

Think what this means to you. There's no dust nuisance or waste. Power consumption is at the minimum. Maintenance is low and supervisory charges can practically be wiped off the books.

Fuller-Kinyon Conveyor Systems can be installed and dry pulverized materials con-

veyed wherever a pipe-line can be run. What's more, one or more Fuller-Kinyon Pump Systems can be interlocked and operated automatically to distribute materials to any desired number of bins in sequence . . . but subject to instant remote control.

If costs for conveying starch, lime, cement, or similar pulverized dry materials have been cutting into your profits . . . if maintenance costs are climbing . . . you'll find it profitable and practical to call in Fuller. Chances are we can show you how minimum expenditure on your part can bring you a conveyor system that means maximum operating efficiency and a consequent improvement in profits.

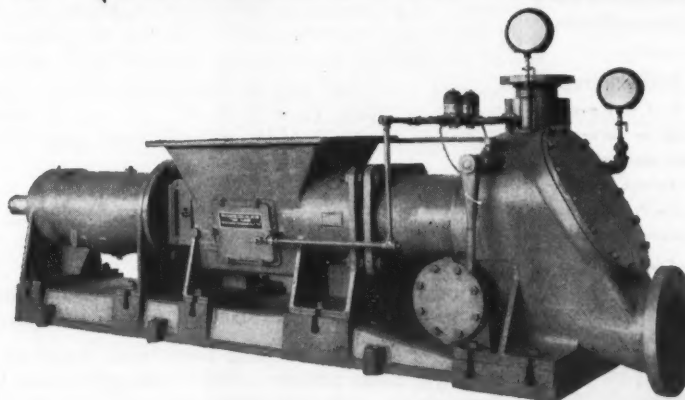
FULLER COMPANY, Catasauqua Pa. • 120 S. LaSalle St., Chicago 3 • 420 Chancery Bldg., San Francisco 4

fuller

DRY MATERIAL CONVEYING SYSTEMS

AND COOLERS—COMPRESSORS

AND ASSOCIATED EQUIPMENT



P-114

When inquiring check CP 4462 on handy form, pgs. 2-3

Step Up Production

SAVE 50%
LABOR-TIME WITH



ROURA Stainless Steel Self-Dumping HOPPERS



EASY TO CLEAN and TO KEEP CLEAN

Especially designed for use in the Chemical Industry, these new Roura STAINLESS STEEL Self-Dumping Hoppers are simple to operate. They are ideal for quick, safe and economical handling of corrosive materials—whether wet or dry, hot or cold. Labor and Time costs can be cut 50%—only one man is needed for distributing and unloading—and he does this in much less time than ordinarily required under old-fashioned manual methods. Thousands of Roura Hoppers (which fit any standard fork or platform lift truck) are in constant daily operation, serving and saving for such firms as Ford, Champion Porcelain, General Electric, National Carbon, International Harvester, etc.

By a simple lift of the exclusive release handle the ROURA HOPPER dumps, rights, and locks itself securely. Sizes— $\frac{1}{2}$, $\frac{3}{4}$, 1, $1\frac{1}{2}$ and 2 cubic yards; the ROURA HOPPER can also be designed for flat trucks and in other sizes to meet specifications. Also, it can be equipped with special flanges that permit stacking to desired tiers for storage or future distribution of materials—conserving valuable floor space. Priced below all competition, the ROURA will quickly pay for itself many times over.

Write today for detailed brochure, "You Can Save 50% Labor-Time."

ROURA IRON WORKS, Inc.
1413 Woodland Ave. Detroit 11, Mich.

When inquiring check CP 4463 on handy form, pgs. 2-3

MATERIAL HANDLING

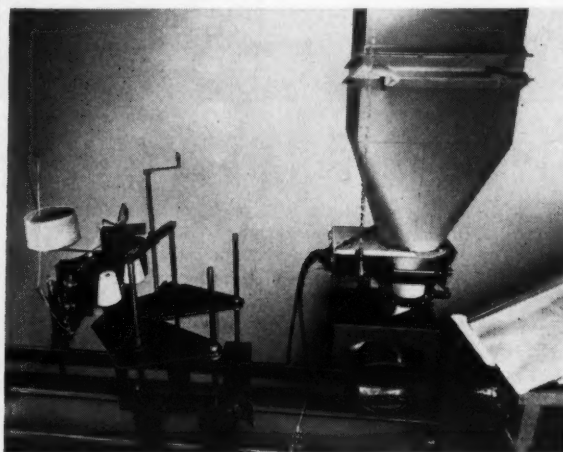
Multwall and consumer bags passed through sewing heads without handling . . .

v-belts collapse bag tops, lead them through sewing heads; all models steel, welded

Uses: For sewing open-mouth multiwall bags up to 46" in length by passing them through high speed sewing heads without handling.

Features: Speed of conveyor is synchronized with the speed of the sewing head at 34 fpm. Thus, the production rate is limited only by the efficiency of the packaging operator and the bag filling speed.

Description: This No. 1210-M model bag closer conforms to others in the series in its all steel welded construction. It is fitted with roller bearings throughout. A 10' conveyor is standard accompanying equipment but 15 and 20' units can be supplied.



V-belts collapse tops of bags, lead them through sewing head for automatic sewn closure

Operating sequence is as follows: first, conveyor leads filled bags in between two v-belts. Belts collapse tops of bags and lead them through sewing head for automatic sewing of closure. An automatic switch stops sewing head on completion of closure. Trailing chain of sewing thread is cut and the filled and closed bag is discharged from conveyor. Closers for consumer size bags are offered in several models. Model No. 1210-A preforms and sews consumer size bags at speeds up to 2,000 per hour. Model 1210-T also passes bags through sewing heads but at the somewhat slower speed of 1,500 per hour. An important difference, however, is that a "double-tape-sewn-closure" is effected and tops of bags are trimmed off above sewing line to improve appearance.

Source: Union Bag & Paper Corp., Dept. CP, 233 Broadway, New York 7, N. Y. . . . or for more information check CP 4464 on handy form, pages 2 and 3.

Broken or damaged side boards of hardwood pallet boxes easily replaced . . .

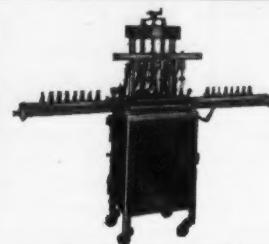
boxes are available with 2-way or 4-way entry type pallet bottoms; take standard fork or hand trucks

Uses: Material handling boxes with 2-way or 4-way entry type pallet bottoms. Boxes have applications in tiering, storing, and transporting.

Features: Spacing of bottom boards can be varied so

FOODS? CHEMICALS? SYRUPS?
LIQUORS? COSMETICS? DRUGS?

Packer
"Junior"
Liquid Filling
Machine



Maximum Production
in Small Space • Versatile

This GIANT for performance is tailored to the needs of packers with limited space. It has all the features of larger, more expensive fillers, yet maintains the precision engineering standards for which Packer Fillers are famous.

for CANS up to quart size
for BOTTLES fractional ounces to quarts

- Fills liquids, thin, foamy, viscous, hot or cold
- Available in 8, 10 or 12 spouts
- Quickly adjustable for various sizes
- Handles sprinkler type
- Liquid contact parts of stainless steel, brass and resistant materials
- Easy to clean

Illustrated Bulletin Available. Write.

PACKER MACHINERY CORP.

32 Irving Place, New York 3, New York

When inquiring check CP 4465 on handy form, pgs. 2-3

PRINT

as you glue...
as you seal

corrugated shipping cases

WITH

PACKOMATIC AUTOMATIC CASE IMPRINTER

Fibre shipping cases automatically packed, glued, sealed, counted, coded and imprinted with up to 8 lines on any or all panels—this can be yours to help reduce operating costs, increase earnings, lower prices to the consumer. Get facts about completely automatic packaging by PACKOMATIC.



PACKOMATIC

T. M. REG. U. S. PAT. OFF.

J. L. Ferguson Company, Rt. 52 at Republic Ave., Joliet, Illinois

When inquiring check CP 4466 on handy form, pgs. 2-3

CHEMICAL PROCESSING

The "MASTER" Line OF MATERIALS HANDLING EQUIPMENT

The Most Complete Line of Materials Handling Equipment on Wheels

*Buy the type of machine
that fits your job.*



Write TODAY for one or more
of these new catalogs . . .

- (24) Master JackLift Electric Trucks and JackStacker Electric Trucks.
- (25) SpaceMaster Electric Fork Trucks.
- (26) Master JackLift Trucks, Hydraulic and Mechanical Handlift Trucks, WeldMaster Skid Platforms.
- (27) SpaceMaster Gas Fork Trucks.
- (28) PowerMaster Stackers, Lifters, Handy Hoisters, Portable Cranes.
- (29) FloorMaster Trucks.
- (30) ToteMaster Gas Trucks.
- (31) LoadMaster Racks for Pallet, Platform, Barrel, Drum, Bin, Unit Loads.

The "MASTER" Line

LEWIS-SHEPARD PRODUCTS INC.

146 Walnut Street, Watertown 72, Massachusetts

Midwest Plant: Crawfordsville, Ind.

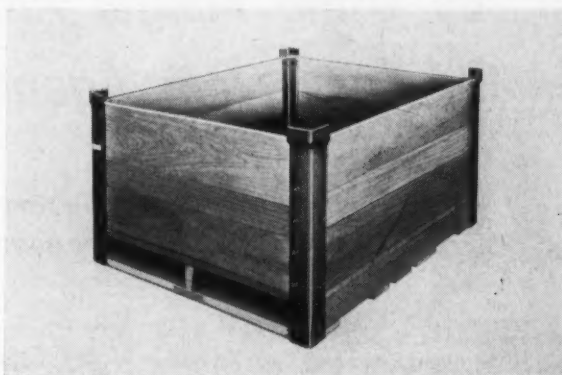
Sales & Service in Principal Cities

When inquiring check CP 4467 on handy form, pgs. 2-3

MATERIAL HANDLING

as to accommodate standard fork trucks or hand pallet trucks.

Description: Boxes are made of hardwood, and are reinforced with outside and inside steel corner angles bolted throughout. Side boards can be easily replaced if they



Note how flared upper sections of corner angles permit interlocking of pallet boxes when tiered

become damaged. Positive locking of tiered boxes is obtained by the extended and flared corner angles at the top. Boxes are available in any size required.

Source: Pallet boxes are made by Ironbound Box & Lumber Company, Dept. CP, 100 Hoffman Place, Hillside, N. J. . . or for more information check CP 4469 on handy form, pages 2 and 3.

Load travel of hoist increased by new boom extension and sheave attachment . . .

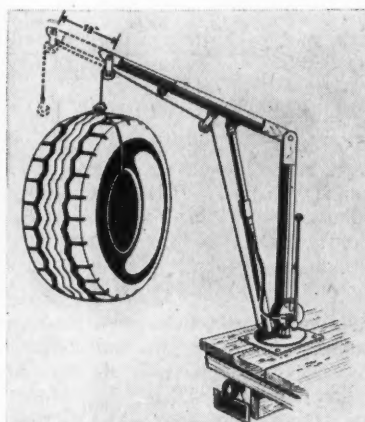
travel extended to 97½", sheave attachment adds 25% more

Uses: Twelve-inch boom extension increases the load travel of maker's "Utility Hoist" from standard of 77½" to 97½", making possible such special handling operations as setting pipe and water hydrants, working in man-holes, and reaching over obstructions.

Features: Optional sheave attachment increases the load travel an additional 25%.

Description: Hoist lifts by means of a wire cable which is secured to a clevis attached to the lower end of the hydraulic cylinder and run through a sheave at the boom end. Hoist is fully automatic in operation. It can be quickly transferred from truck bed to floor frame.

Source: Development of Unit Manufacturing Company, Dept. CP, 330 South 6th St., Minneapolis 15, Minn. . . or for more information check CP 4470 on handy form, pages 2 and 3.



New boom extension for hoist

Specific Problem... Specific Answer!

YOU'LL GET MORE DONE
WITH A HOIST THAT'S
EXACTLY RIGHT...

...for continuous
quick-lifting power

YALE LOAD KING ELECTRIC HOIST

This rugged, moderately priced new YALE hoist can stay on the job 'round the clock, lifting at speeds from 9 to 41 F.P.M.! One arm push-button control makes it easy to spot loads precisely. In wire rope or chain models with trolley, lug or swivel hook suspension.

Capacities:
¼ to 2 tons

...for dependable
general-purpose lifting

YALE MIDGET KING ELECTRIC HOIST

Here's a YALE money-saver that fills the bill perfectly on a thousand-and-one lifting jobs. Get speedy lifting, fast, accurate spotting of loads. One-hand bar control leaves operator free to guide loads as he lifts or lowers. Non-fracturing steel load hook. Trolley or swivel hook suspension models available, AC or DC.



Capacities:
¼ to 1½ tons

and there are many more!
A YALE HOIST FOR EVERY JOB
Get all the facts today!

The Yale & Towne Manufacturing Co., Dept. 125
Roosevelt Boulevard & Malden Avenue
Philadelphia 15, Pa.

Please show me how I can step up production with YALE hoists.
Please have your local representative call on me.
Please send me FREE detailed literature.

Name _____
Company _____
Street _____
City _____ State _____

YALE is the registered trademark of The Yale & Towne Manufacturing Co.

**YALE MATERIALS
HANDLING EQUIPMENT**

THE YALE & TOWNE MANUFACTURING COMPANY
In Canada write The Yale & Towne Manufacturing Company, St. Catharines, Ont.

When inquiring check CP 4471 on handy form, pgs. 2-3

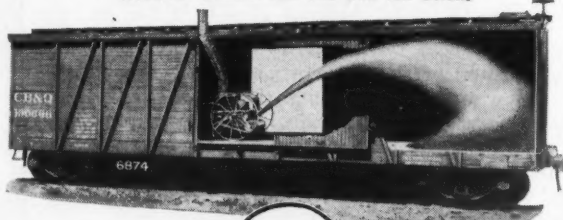
SAVE TIME And Manpower S-A BOX CAR LOADER

● An S-A portable Box Car Loader automatically loads and trims box cars in a fraction of the time ordinarily required by hand methods. The loader operates unattended after being placed in the car and requires only part time

attention of one man. The attendant is therefore able to avoid any dust hazards.

The Standard Loader will handle large tonnages of loose granular material not exceeding 2 inches in lump size.

Write for Bulletin No. 948 with full details



STEPHENS-ADAMSON

MFG. CO.

Tellevel-Bin Level MFG. CO. SealMaster Ball Bearings
Controls Car Loaders Car Pullers Winches
Saco Speed Reducers

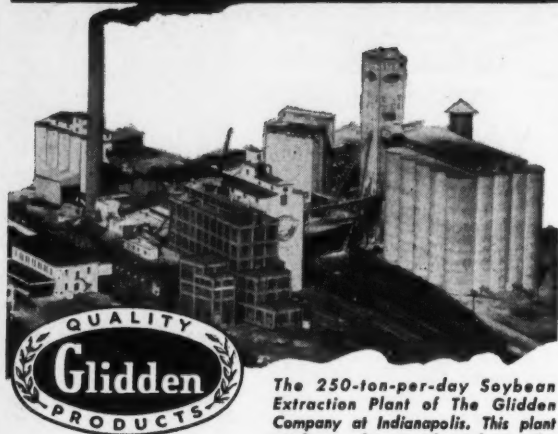
11 RIDGEWAY AVE., AURORA, ILLINOIS

When inquiring check CP 4468 on handy form, pgs. 2-3

MAY, 1951

Page 59

SIX DAY FILTERS CONTROL DUST IN THIS SOYA EXTRACTION PLANT



The 250-ton-per-day Soybean Extraction Plant of The Glidden Company at Indianapolis. This plant produces degummed and non-degummed soybean oil and 4-Hi Meal.

The Glidden Company has assumed a leading role in the nation's chemical, paint and food industries and today operates 37 plants and two mines in 25 communities. Visualizing the soybean as a vastly important source of raw materials for chemicals, paint, food and feed, Glidden established soybean research and processing plants at Chicago and Indianapolis.

Important in soybean processing is the elimination of the dust problem. For this purpose Glidden chose DAY Dust Control Systems with highly efficient DAY Type "AC" Dust Filters.

6 FILTERS, 4 COMPLETE SYSTEMS INSTALLED IN INDIANAPOLIS PLANT

SYSTEM ONE includes one DAY Type "AC" Dust Filter installed on the pulverizer grinding system used for grinding toasted flakes into meal.

SYSTEM TWO combines two DAY Type "AC" Dust Filters operated in parallel for dust control on bean preparation operations, including de-hulling and collecting dust off the flakes before they are transmitted to extraction.

SYSTEM THREE consists of the extraction filters. Two DAY Type "AC" Dust Filters connected in parallel recover dust from the hull cyclone and meal cooler cyclone.

SYSTEM FOUR utilizes one large DAY Type "AC" Dust Filter which is divided into two sections and located on the track shed roof. Section one collects dust from the bulk meal car loading system; section two collects dust from the grain unloading operations at the elevator.

DAY CAN SOLVE YOUR DUST PROBLEM

Since 1881, The DAY Company has specialized in engineering, manufacturing and installing dust control systems. DAY engineers are ready to serve you efficiently and economically regardless of the dust situation in your plant.

For complete information on DAY Dust Control Systems and DAY Type "AC" Dust Filters, Write-to-DAY.



The DAY Company

852 3rd Ave. N.E., Minneapolis 13, Minn.
IN CANADA: P. O. Box 70, Ft. William, Ontario
Branch Plants in Ft. Worth, Buffalo and Welland, Ontario

Ethyl Alcohol Can Be Produced by Using Fungal Amylase as Converting Agent

Process is less expensive than when barley malt is employed;
yields are at least as good, by-product feeds the same

COMMERCIAL-SCALE experiments at the Grain Processing Corporation, Muscatine, Iowa, indicate that industrial alcohol can be produced from grain, using a mold product called fungal amylase in place of malt, at less cost than by the traditional malt process. Yields of alcohol from either sound or heat-damaged corn are at least equal to those obtained when malt is used. The mold enzyme apparently has no adverse effect on distilling operations or quantity of alcohol, and by-product livestock feeds are practically identical to those from the malt process.

The process was developed by the Bureau of Agricultural and Industrial Chemistry. The Northern Regional Research Laboratory in Peoria, Illinois, conducted the initial research and development work and aided in supervising the commercial-scale runs. This laboratory determined the best method of making the fungal amylase, using *Aspergillus niger*, and established the amount needed per unit batch of mash.

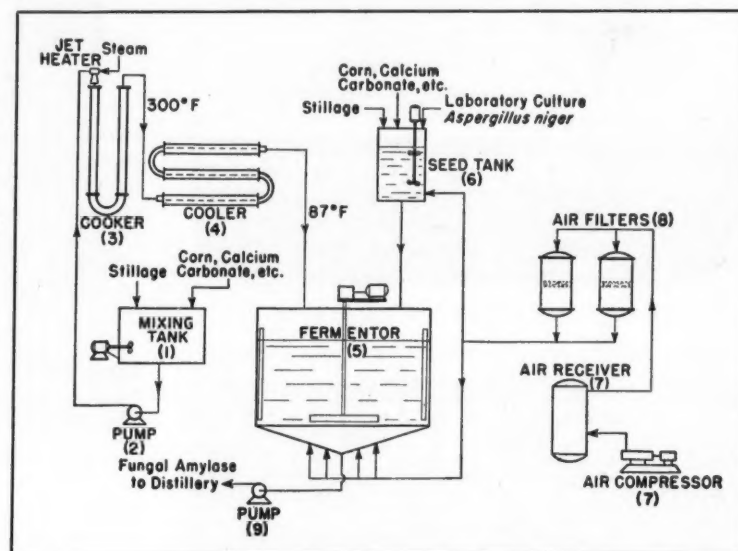
The diagram accompanying this article illustrates the flows and component parts of the plant for producing fungal amylase. While this flowsheet shows calcium carbonate being added before inoculation and fermentation, recent studies have shown that improved enzyme preparations are obtained when it is eliminated and the concentration of grain is increased.

Sufficient fungal amylase was produced per run to convert enough grain to set two large fermentors in the distillery. As the capacity of each alcohol fermentor was 100,000 gallons, and about 10% fungal amylase was to be employed for conversion, capacity of the fungal amylase plant was set at about 20,000 gallons per run.

The cooker, cooler, fermentor, air filters, seed tank, and pipelines that connect these units had to be sterile or free of contaminants during all or some portion of the fermentation cycle. Therefore, provisions were made to sterilize the equipment and lines with steam at a pressure of 15 psig when possible. Lines and valving were given special consideration so cleanliness could be assured.

Amylase plant operation

Solids content of thin stillage was about 4%, and it was increased to 6-8% by fortification with distillers'



Flowsheet for production of fungal amylase

sirup (evaporated stillage) that contained approximately 25% solids. Ground corn, calcium carbonate and a solution of sodium hydroxide were added proportionately to the fortified stillage in the mix tank. These ingredients were added in quantities sufficient to give the medium a composition of about 1% corn and 0.25-0.50% calcium carbonate. Initial pH was 5.0-5.5. A small amount of ammonium bifluoride also was added to the stillage at this time, to inhibit bacterial growth in the medium if it became contaminated during fermentation.

Temperature of the medium was increased to 290°F by mixing it with 55 psig steam in the jet heater. Temperature was held at this point during 6-minute passage through cooker. The hot medium passed through an expansion valve to cooler, where its temperature was reduced to 87°F, and thence to the fermentor. About 12 hours were required to sterilize 25,000 gallons of medium.

From 24 to 30 hours before the large fermentor was charged with sterile medium, the seed tank had been inoculated. The seed medium was prepared and sterilized batchwise, using double cooking and an intervening rest period. After the medium was cooked with open steam for 60 minutes at 240°F, it was cooled to 90-100°F and kept at this temperature for several hours. It was then recooked for 60 minutes at 270°F, then cooled to 87°F

and inoculated with a lab culture of *Aspergillus niger*. Hot medium was cooled by a spray of cold water on the outside of the tank. Cold water or warm condensate was sprayed on the tank to control temperature of medium at 84-88°F during fermentation.

After the 24-30 hours of incubation, the seed culture was transferred to the fermentor. The fermentor was inoculated while it was being charged, and usually when it contained about 8,000 gallons, which was enough to cover the turbine agitator in the fermentor. Aeration of the fermentor was begun immediately after it had been steamed and just

Utilization of Fungal Amylase Liquor for Conversion of Corn Mash—Run No. 26B

| | |
|---|--------|
| Saccharification value of liquor, % | 38.5 |
| Corn mashed for 2 fermentors, as rec'd, bu | 6,961 |
| Grade of corn used | No. 3* |
| Gal mold liquor/bu corn as rec'd | 3.9 |
| Malt added to help thin mash, % of grain bill | 0.3 |
| Conversion temperature, °F | 153 |
| Type stillage for backset | None |
| Age of beer when fermentor emptied, hr | 104 |
| Final specific gravity, ° Balling | 0.2 |
| Acidity | |
| Titratable | 4.00** |
| Final, pH | 4.6 |

Alcohol in finished beer, % 7.91

Final conc. grain in beer per dry bu, gal 38.3

Yield alcohol per 56 lb dry grain, proof-gal 6.07

*Graded No. 3 because of moisture content.

**Milliliters of 0.1 N NaOH to titrate 10 ml of filtered beer to phenolphthalein end point.

before sterile medium was pumped into it. In this way, the pressure inside the vessel always was slightly greater than atmospheric, a condition which is recommended for pure culture fermentation.

After 48-60 hours of fermentation, the fungal amylase liquor was ready for use, and was pumped to the distillery as needed during mashing operations.

Principal difficulty in preparation of the fungal amylase liquor was contamination of the medium during fermentation. In only three experiments of sixteen was the finished liquor free of contamination. The enzyme potency of the fungal amylase liquors varied widely. Saccharification powers as low as 15.2% and as high as 39.3% were obtained. It is believed that contamination was the chief cause of the variation. In pilot plant work at the Northern Laboratory, consistent results were obtained, but contamination was infrequent.

Alcohol plant

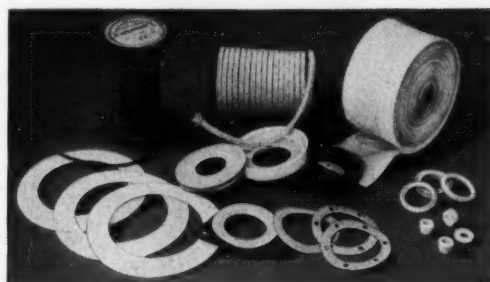
The alcohol plant contained customary units with usual construction. Departure from general practice was the substitution of amylase liquor for all, or nearly all, of the malt customarily used in preparing the mash.

An alcohol fermentor was charged with 2700-3500 bushels of corn, the amount charged depending on concentration of grain in mash. One batch of fungal amylase liquor was used to convert mash for two fermentors. Temperature of the fermenting mash was adjusted when necessary by circulation of the liquor through a heat exchanger at the base of a fermentor. The yeast inoculum was prepared from malt-corn mash which was lactic-soured. Most alcoholic fermentations of mash converted with fungal amylase were in process over a weekend; hence, a beer

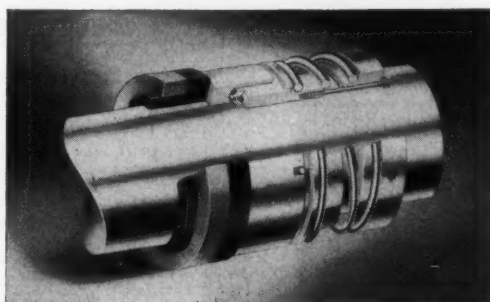
(Continued on next page)

New and Improved Packings, Gaskets and Seals

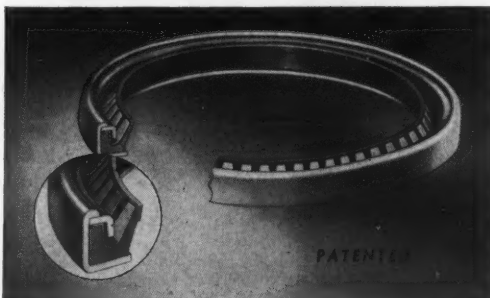
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Garlock

When inquiring check CP 4473 on handy form, pgs. 2-3

(Continued from preceding page)

was 4 or 5 days old at the time it was distilled.

By-product feeds were recovered at the plant by regular methods. Whole stillage was screened, and the oversize particles of grains pressed and dried to make distillers' light grains. The thin stillage that passed through the screen was concentrated by evaporation to a sirup containing about 25% solids. Sirup was pumped to a double-drum dryer where distillers' dried solubles were produced. During the experiments, some distillers' dark grains were made. In this case, the dried light grains were mixed with sirup and the mixture dried in a rotary unit. Again, there was some difficulty in sharply separating mold and malt by-product feeds because of the constant flow of material through the plant.

On the average, about 3.5 gallons of mold liquor were used for conversion of 1 bushel of corn as received. The controlling factor in the experiments was liquefaction

Properties of Products Made With Fungal Amylase as Converting Agent—Run No. 26B

Alcohol

Chemical analysis

| | |
|---------------------|-------|
| Esters, gm/100 l | 0.896 |
| Aldehydes, gm/100 l | 0.392 |
| Fusel oil, gm/100 l | 2.1 |

Organoleptic evaluation*

| | |
|-------|------|
| Odor | Good |
| Taste | Good |

Feeds

Dried Grains

| | |
|-------------|------|
| Moisture, % | 9.1 |
| Protein, % | 23.4 |
| Fat, % | 10.4 |
| Fiber, % | 9.5 |

Solubles

| | |
|-------------|------|
| Moisture, % | 4.9 |
| Protein, % | 31.0 |
| Fat, % | 14.5 |
| Fiber, % | 3.8 |

*Evaluations relative to high-grade spirits made with malt. Frequency of rejection of mold alcohol no greater than that of spirits made with malt.

during mashing. No attempt was made to determine the effect on fermentation of smaller amounts of liquor. However, in pilot plant work and in recent plant-scale experiments, satisfactory results were obtained with 2.7 gallons and less of fungal amylase liquor per bushel of grain when the liquor was of good quality and under favorable conditions for primary conversion.

Secondary conversion and fermentation of mold-converted mash appeared to proceed more slowly than with malt-converted material. This indicates that a longer fermentation time might be required when fungal amylase is used, unless more favorable primary conversion were obtained.

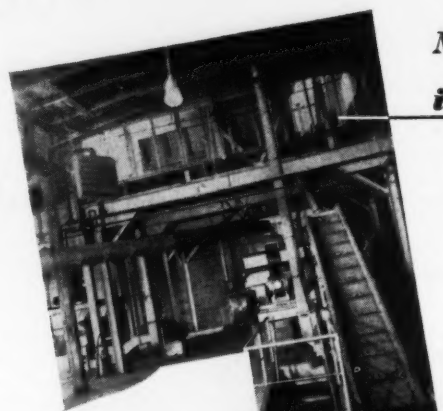
Experiment 26B was a very successful run. Corn mash for the second fermentor of this experiment was converted with fungal amylase mixed with only a very small quantity of malt (0.3% of the total grain bill); yet the mashing operation was normal in all respects. It is significant that the mold liquor was of good quality. Data on this run are presented in the accompanying tables.

pointers

to

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PROCESSING

EQUIPMENT INFORMATION FOR PROCESSING PLANTS



Main Floor

of granulating plant gives glimpse of overall operations. Note fire-proof construction, clean, compact installation.

Consult with Sprout-Waldron on your processing problems.

MODERN CORK REDUCTION PLANT

installs Sprout-Waldron Equipment

... throughout!

Illustrations show how Sprout-Waldron machines and engineering know-how tackled a diversified size reduction assignment.

The Hoosier Crown Corp., Crawfordsville, Indiana, makes cork seals for bottle caps.

When it was decided to expand and modernize the Hoosier cork granulating plant, Sprout-Waldron was called on the job. Through close cooperation with S-W sales engineers, improved manufacturing techniques were developed. Equipment designed and built by S-W was installed to meet specialized processing requirements of Hoosier Crown Corp.

Today, installation photographs graphically illustrate another Sprout-Waldron "success story"—the story of successful operations achieved through the right combination of men, machines, and experience!

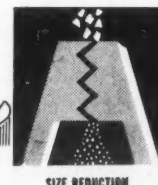
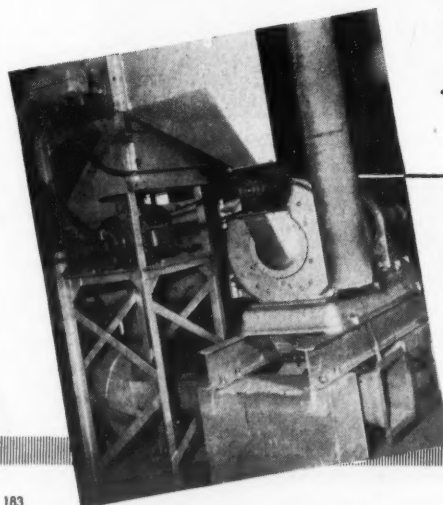
1st reduction

Preliminary crusher in basement makes first breakdown of cork blocker waste. Strips 10-12" long and 2" thick are reduced to 2" ring size. This unit has a higher production rate, and consumes only one-third the horsepower of previous equipment.



2nd reduction

The function of the 24" single runner attrition mill is to free the cork bark without cutting or shredding the cork wood. Equipped with specially designed plates, this mill provides a rubbing action which removes the friable "hardback" most efficiently.



SIZE REDUCTION

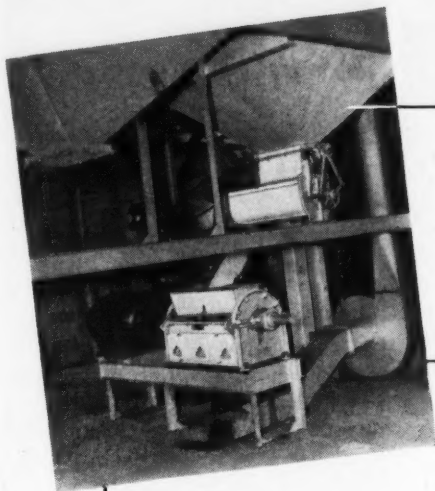
MIXING & BLENDING



pointers

to **BETTER
PROCESSING**

EQUIPMENT INFORMATION FOR PROCESSING PLANTS

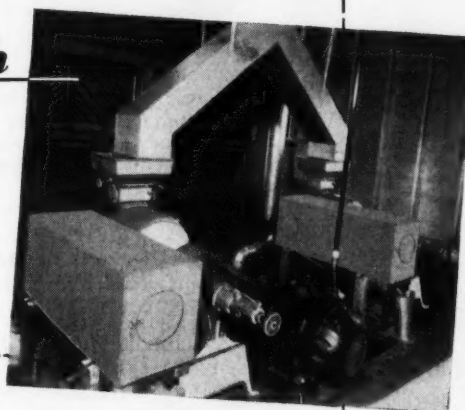


3rd reduction

After preliminary cleaning through bolting reel, cork is uniformly granulated to specified screen analysis by rotary knife cutter equipped with 25 HP motor. This refined cork product is now air-conveyed to two 16" buhr stone mills.

4th reduction

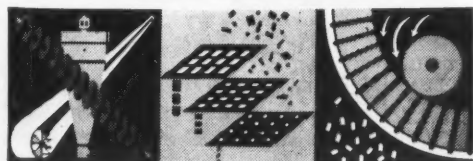
The two buhr stone mills illustrated serve as a buffing medium to put the finishing touches on the clean cork granules. The small shaker to the left of each mill sifts out and reclaims any cork flour produced by this scouring action.



the clean up!

For further information about Sprout-Waldron Processing Equipment, and Size Reduction Systems in particular, write to Sprout, Waldron & Co., Inc., 10 Waldron St., Muncy, Pa.

Sprout-Waldron
Manufacturing Engineers
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BULK MATERIALS HANDLING PRODUCT CLASSIFICATION PELLETIZING & CUBING

From the buhr stones the buffed cork enters double disc aspirator for final "air-washing". Heavy, woody granules are removed and the clean light granules are picked up and conveyed by air to storage bins for further processing.



IDEAS

Results of stock feeding tests, using distillers' dried grains and dried solubles produced in the fungal amylase conversion, show that these by-products are comparable to the customary products in feeding value and palatability.

Estimated costs

Based on 1949 costs and information furnished by Grain Processing Corporation, it is estimated that alcohol can be produced by the fungal amylase process at a saving of 3.71c per wine gallon of 190-proof alcohol over the customary malt conversion process. This saving is due entirely to the lower cost of the fungal amylase.

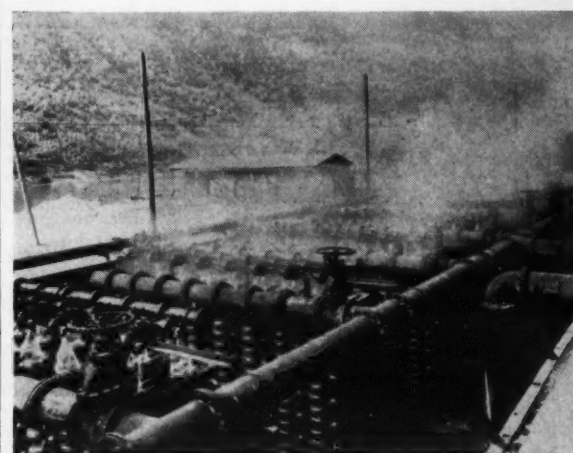
(Complete report is available in Technical Bulletin No. 1024, a copy of which may be obtained from the Information Branch, Production and Marketing Administration, U.S. Department of Agriculture, Washington 25, D.C.)

No maintenance for year on cooling sections for acid mixture . . .

sea water cools 40,000 gph 59° Be' H₂SO₄ holding one to four percent 36° Be' HNO₃

Norwegian Zinc Company, Odda, Norway, has been cooling 40,000 gph of 59° Be' sulfuric acid containing one to four percent 36° Be' nitric acid in cast iron cooling sections sprayed with raw sea water for one year. The company reports that the installation has required no maintenance of any kind. It originally replaced a submerged lead coil cooling system.

Installation consists of 864 cast iron cooling sections assembled in 48 stacks of 18 sections each. They are arranged in six rows with eight stacks in each, and oc-



Sprayed sea water cools acid in cast iron cooling sections

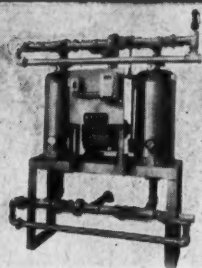
cupy total area 40 x 18' in catch basin. Stacks are connected for parallel flow, thus providing for average flow of 830 gph of acid through each stack. Acid flow is by gravity, thus minimizing pressure in coils.

The 18 sections in each stack provide cooling surface of 225 sq ft, over which sea water, sprayed from above, flows as thin water film. Internal fins are designed to provide maximum heat transfer with minimum resistance to acid flow. Using only 1010 gpm water at maximum summer temperature of 77°F, acid is cooled from 100 to 40°C.

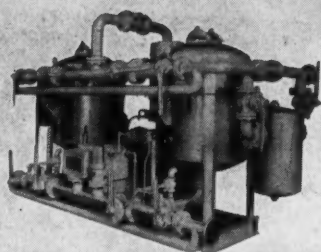
(Designed by The National Radiator Co., Heat Transfer Division, Dept. CP, Johnstown, Pa. . . . or for more information check CP 4475 on handy form, pages 2 & 3.)

When inquiring check CP 4474 on handy form, pgs. 2-3

Standard or Special...

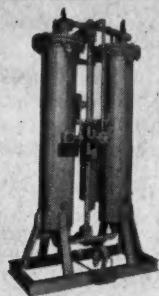


This Kemp Radiation-Cooled Dryer gives maximum efficiency with minimum maintenance and operating costs. Heating period terminates automatically. Rated: 300 scfm, 100 psig, 70° F.

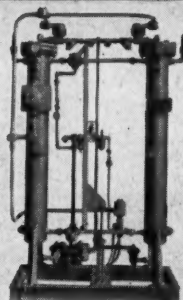


This electrically activated Kemp Dryer is designed so gas stream is not contaminated by air normally used for reactivation. Rated: 3200 scfm, 100 psig, 70° F.

KEMP can Solve...



This Semi-automatic Kemp Oriad Dryer dries air for actuating tools, valves, etc.—dries process air and gases. Rated: 600 scfm, 100 psig, 70° F.



This Kemp Oriad Dryer is controlled by program timer. All operations, including tower reversals, fully automatic. Rated: 100 scfm, 100 psig, 70° F.

Your Moisture Problem

**DRIES AIR, GASES or LIQUIDS
TO NEW LOW DEW POINTS
FOR AS LITTLE AS ¼¢ PER MCF**

Whatever you pay for drying air, gases or liquids, check on the economy of Kemp Dynamic Dryers! Hundreds of Kemp Dynamic Dryers control moisture at low cost in plants all over the country. Operation is guaranteed to your specifications. In fact, many Kemp users report drying to sub-zero dew points for as little as ¼¢ per mcf—including all

charges for labor, capital investment and materials!

Flexible Design

Kemp Dynamic Dryers are versatile — offer manual, semi-automatic or automatic operation. Desiccant is especially selected and compounded for the type drying you require. With Kemp you can dry air, gases or liquids, eliminate moisture in materials, and control humidity in large or small areas. Gas, electric or steam regeneration is supplied as standard equipment.

Find out how Kemp engineering can save you money!

KEMP DYNAMIC DRYERS
OF BALTIMORE

Write For Bulletin D-27 for technical information. Address: C. M. KEMP MFG. CO., 405 E. Oliver St., Baltimore 2, Md.

IDEAS

Simple settings of rule yield nuclear data

Answers to many nuclear research problems are speeded up by a circular type slide rule. It is made of Vinylite plastic rigid sheet, making it durable, easy to clean, and resistant to physical or chemical attack.

Special combinations of scales used only in the field of radioactivity are arranged on the two sides of the rule. Simple settings of the rule give such values as



Circular slide rule speeds nuclear research problems

count rate, statistical error, coincidence loss, activity of sample versus half life, radiation flux after passage through absorbers, and other data. A sheath of Vinylite sheeting holds the rule. (Produced by the Nuclear Instrument & Chemical Corporation, 223 W. Erie St., Chicago 10, Ill.)

Sugar-derived substitute for blood plasma to be made in U.S. soon

A substitute for blood plasma that is now being sold in Great Britain will be made in the United States shortly. "Intradex", as the product is known, is a 6% sterile solution of dextran that is derived from cane sugar in a process similar to that for production of penicillin.

Not a substitute for whole blood, it is, however, being widely accepted in cases where plasma is called for. Intradex can be shipped without change in its properties and does not have to be kept at any particular temperature when stored in an emergency stockpile. Potency does not diminish with age, it is reported. (Being produced by Dextran Ltd., East Anglia Chemical Company Ltd., Darlington, England, as well as by firms in 20 other countries around the world.)

Continuous automatic mixing in 6-story-high system ups chemical output...

two or more components accurately blended in an infinite variety of formulas; production up 80%

A continuous automatic mixing machine, 6 stories high, has doubled output of photographic fixers at Eastman Kodak Company, Rochester, N. Y. This huge stainless steel unit handles nearly a carload of chemicals daily. These are poured in at top and thoroughly mixed, according to formula, by the time they reach the first floor.

Can your product be improved?

...the chemical industry is finding many new uses for improving manufacturing processes and products with Filtrol* Catalysts and Adsorbents. High uniformity of quality and the ability to pinpoint adsorbent or catalyst specifications to specific product requirements assure optimum processing efficiency and economy.

Low cost and high performance have made Filtrol Catalysts and Filtrol Adsorbents the consistent first choice of the petroleum industry. Now, comparable results are being achieved in the chemical industry with the many grades of pelleted and powdered forms of Filtrol products.

Act now — perhaps your product or process can be improved with Filtrol Catalysts or Adsorbents. Write today for information concerning your specific applications and samples.



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CORPORATION

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*T.M. Reg. U.S. Pat. Off.

When inquiring check CP 4477
on handy form, pgs. 2-3

CHEMICAL PROCESSING

When inquiring check CP 4476 on handy form, pgs. 2-3

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Chlorine, Phosphate, etc.,
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You'll find many uses for this handy, 96 page, combination reference book and catalog. It is packed with facts on the theory and application of colorimetric methods for control of pH, Chlorine, Phosphate, Nitrate, Sulfite, Calcium, Magnesium, Iron, Fluoride and many others. Specific applications to 34 basic industries are discussed.

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Every Taylor Comparator is illustrated and described in detail. General instructions for proper use are given. Only Taylor gives you an unlimited guarantee against fading of color standards.

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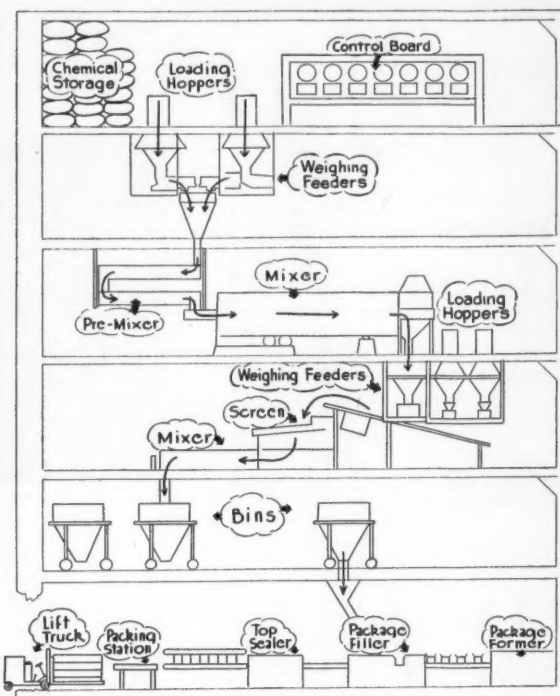
W. A. TAYLOR AND CO.
YORK & RODGERS FORGE BLDG. - BALTIMORE 4, MD.

When inquiring check CP 4478
on handy form, pgs. 2-3

IDEAS

Kodak engineers say the new equipment is capable of out-producing the old mixing method by more than 80%. Under the old system, fixers were blended by individual batches in a single mixer. Sequence of operations is indicated in drawing showing arrangement of various types of equipment, control facilities and final packaging and shipping.

On the sixth floor, attendants supply anywhere from two to five different chemicals required by the specific formula being used. Master control station on this floor contains the electronic devices directing the entire mixing opera-



System weighs, blends chemicals into photo fixers

tion, and shutting down the whole system if any unit, or chemical supply, fails. Hoppers dispense chemicals on the fifth floor, where continuous automatic weighing machines control rate of flow of each chemical. These then pass into a central hopper and flow to mixers on floor below.

At the fourth floor level, the chemicals are thoroughly blended in two giant mixing machines. Two more chemicals are placed in separate hoppers and added to mixture by automatic weighing machines on third floor. Powder is carried by belt to final mixer, which screens out lumps and then delivers completed mix to portable storage bins on second floor.

As each storage bin is filled with fixer, a sample is taken for laboratory analysis. Following the lab quality check, bins are moved over floor ports to serve as hoppers for a battery of filling machines on the first floor. Mixing operations can be stopped at any point in the installation. Vacuum dust removal system carries away chemical dust at all hoppers and mixing machines, eliminating the usual dust nuisance.

Packaged fixers leave the building by truck, usually within half an hour. Seven individual photo fixer components in an infinite variety of formulas can be handled by the system. (Eastman Kodak Company, Dept. CP, Rochester, N. Y.)

IMPERVITE IMPERVIOUS GRAPHITE

HEAT EXCHANGERS



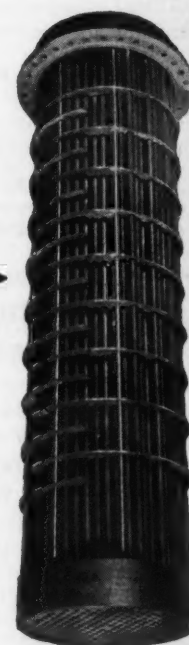
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When inquiring check CP 4479 on handy form, pgs. 2-3



"B&W ALLMUL FIREBRICK
gives me twice the
performance for my money!"

You, too, may discover new and truly important ways to save money with B&W ALLMUL—the new performance-proved, electric-fused mullite firebrick. B&W engineers have designed special mass production methods to produce this incomparable firebrick at a cost hitherto considered impossible. One result is the performance vs. price ratio charted at the right. And it's a big result, economically.

Another is a long list of Allmul repeat orders for the most severe service applications — ferrous and non-ferrous melting furnaces, slag melting furnaces, glass tanks, checker chambers, ceramic kilns and many others.

The properties described in the panel below explain why Allmul eliminates need for frequent furnace relining, cuts maintenance and saves valuable production time.

If you have not already investigated this remarkable new firebrick, we urge you to do so at once. The sooner you start using B&W Allmul, the greater your ultimate savings will be. SEND FOR NEW BULLETIN R-29.

ALLMUL is another important refractories development by B&W engineers who have continuously established new standards in industrial furnace refractories for the past 30 years.

CHECK THE PROPERTIES OF ALLMUL!

Here's how B&W Allmul stood up under standard tests.

SPALLING—12 cycles of heating to 2550F and chilling in cold air and water spray. **Result**—no loss.

HOT LOAD DEFORMATION—1½ hours at 3050F under load of 3600 pounds per square foot. **Result**—less than 2% deformation.

PERMANENT VOLUME CHANGE UNDER REHEATING—After 5 hours at 3200F. **Result**—less than ½% change.

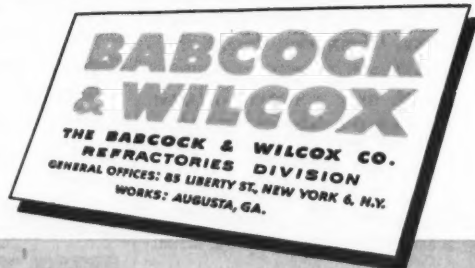
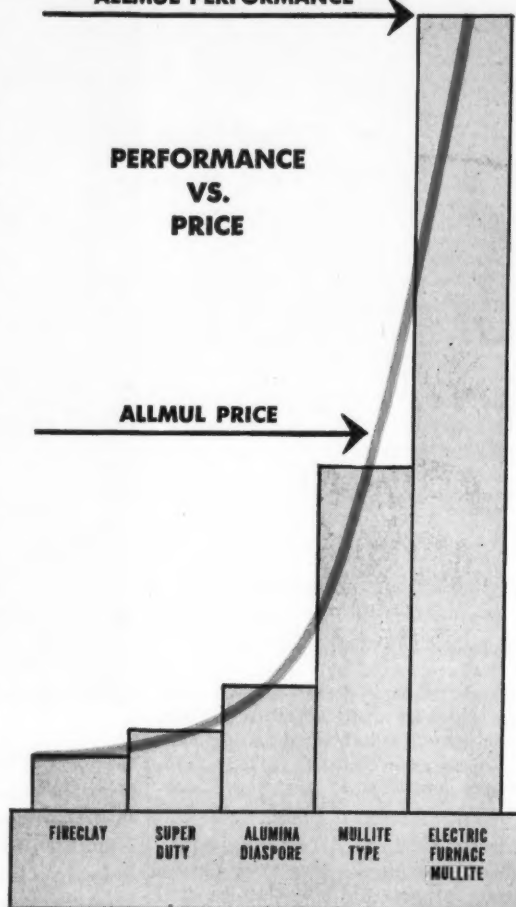
FACT—no other firebrick in Allmul's price range can match its performance. **Fact**—no mullite brick at any price can better the performance of B&W Allmul.



ALLMUL PERFORMANCE

PERFORMANCE VS. PRICE

ALLMUL PRICE



B&W REFRACTORIES PRODUCTS—B&W 80 Firebrick • B&W Junior Firebrick • B&W 80 Glass Tank Blocks • B&W Insulating Firebrick
B&W Refractory Castables, Plastics and Mortars • OTHER B&W PRODUCTS—Stationary & Marine Boilers and Component Equipment...
Chemical Recovery Units... Seamless & Welded Tubes... Pulverizers... Fuel Burning Equipment... Pressure Vessels... Alloy Castings

When inquiring check CP 4480 on handy form, pgs. 2-3

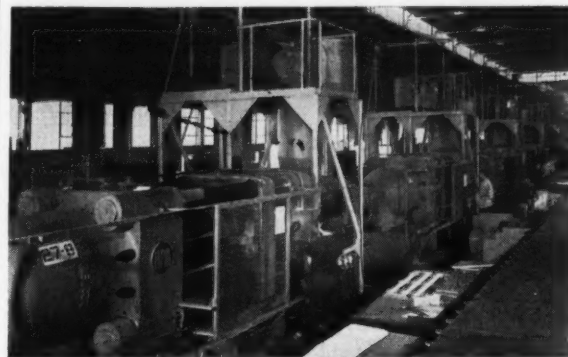
IDEAS

60 oz of plastic material molded in each cycle by huge injection machine...

five of these 100,000 lb units are making refrigerator chest doors, etc., at General American's new plant

What is probably the world's biggest production line for large injection molded plastic parts recently went into action at General American Transportation Company's new factory in East Chicago, Ind. Typical parts being molded are household refrigerator freezer chest doors and humidifier drawers, and TV windows.

Huge injection molding machines, each weighing over 100,000 lb, are used. Molds are "squeezed" with 1000 tons pressure. The hot plastic is injected into the chilled mold with a pressure of 20,000 psi. Five of these ma-



Battery of injection molding machines at General American's new plant

chines, each capable of molding 60 oz of plastic material per cycle, are shown at work in the plant. They incorporate features which permit a normal production cycle of less than one minute.

Molded parts are placed on a conveyor belt which transports them to the packing department at the other end of the plant.

(Molding machines were designed and built by The Hydraulic Press Mfg. Company, Mount Gilead, Ohio).

Ductile bismuth wire, ribbon may be very useful in control devices...

industry can now take advantage of metal's electrical characteristics without worrying about its brittleness

Successful production of ductile bismuth wire and ribbon may bring about some sweeping changes in the field of instrumentation. Probably the most important characteristic of bismuth wire to the electrical engineer is its large increase in resistance when placed in a magnetic field—between 2,000 and 35,000 gauss, its proportionate response is about 214% at 18°C.

Suggested uses stemming from this property are in current and voltage control instruments, and devices for exploring the intensity of magnetic fields in motors and generators. A high resistance bismuth coil in a magnetic field could be tied into the grid circuit of an electronic tube, for example.

Bismuth also exhibits the Hall effect to a marked degree. When a flat strip of the metal is placed within a magnetic field, with its surfaces at right angles to the direction of the field, and a current is passed through the length of

CHEMICAL PROCESSING

the strip, a difference of potential will take place between top and bottom surfaces of the strip.

Possibly this effect could be used in the electronics field, where the Hall potential could be applied directly to the grid circuit of a sensitive electron tube, with the longitudinal current of the bismuth strip forming the filament circuit. Slight changes in magnetic field would then cause large changes in tube output. This suggests the possibility of developing apparatus for voltage and current regulation and instruments for measuring both weak and strong magnetic fields.

Bismuth is said to be the most negative material known for thermocouples, giving -69 microvolts per °C, at 0 to 100°C, when joined with platinum. It has a resistance of 720 ohms per mil ft. A bismuth-tin alloy (95Bi-5Sn) gives +57 microvolts per °C, at 0 to 100°C, when joined with platinum. This alloy has a resistance of 2150 ohms per mil ft.

Probably the main reason why bismuth wire and ribbon have not found wide industrial application until now is lack of ductility. By a special process the wire can be made ductile enough to wind on its own diameter at room temperature. It will not age-harden, crystallize or disintegrate in time. However, it will crystallize when drawn through dies, and it cannot be melted because it then takes on all the faults of regular bismuth. It will not withstand vibration, so all coils must be impregnated in some thermosetting plastic. Also, its tensile strength is rather low—5000 psi.

Wire is being made in 0.039, 0.022 and 0.011" diameters at present, with 0.002" slated for the near future. Ribbon is made in one size, 0.250 x 0.0047". Samples are available to interested parties.

(Full details are available in booklet, "Ductile Bismuth Wire—The Magic Metal of the Age," which can be obtained from Fitzpatrick Electric Supply Co., Dept. CP, 444 Irwin St., Muskegon, Mich. . . or for more information check CP 4481 on handy form, pages 2 and 3.)

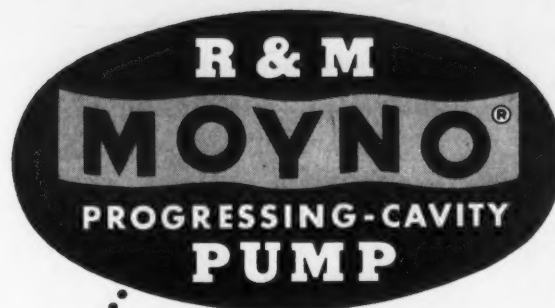
Plastic tableware standards, simple test methods issued by USDC . . .

commercial standard CS 173-50 is effective at once

Melamine plastic tableware standards have now been set up by the Commodity Standards Division of the United States Department of Commerce. Purpose is to foster maintenance of quality of melamine plastic tableware and to provide a nationally-recognized specification for information of producers, distributors, and users. This commercial standard covers chemical and physical properties and methods for testing heavy-duty tableware molded of alpha-cellulose-filled melamine plastics. The materials used are composed of melamine formaldehyde resin combined with alpha-cellulose as filler.

Methods of test are designed so that they can be conducted by purchasers, distributors, or molders, without use of costly equipment, and by personnel that need not be technically trained. Meeting tests is evidence of proper molding.

Standard covers methods of test, workmanship, thickness, finish, resistance to boiling water, resistance to dry heat, and other detailed requirements. An identifying Hallmark has been included, indicating compliance with this standard. (The Society of the Plastics Industry, Inc., Dept. CP, 295 Madison Ave., New York 17, N. Y.)



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HERE'S SMOOTH, CONTINUOUS POSITIVE PRESSURE FOR ALL YOUR PUMPING NEEDS

Moyno "progressing-cavity" pumping—with its positive displacement and pressure—delivers constant, uniform, steady flow on every type of service. Even liquefied gases, such as butane, propane, carbon dioxide, oxygen, nitrous oxide, etc., won't "flash" to cause vapor-locking. And heavy slurries or non-pourable pastes present no problems whatever. *Thousands* of Moynos in daily use are doing the "impossible."

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No Pistons or Valves, and Just One Moving Part

Moynos self-prime with nearly perfect vacuum—pass particles and solids in suspension—deliver positive pressures to 1000 p.s.i., without pulsation—meter flow—reverse merely by reversing rotation—stand up where other pumps fail. The simple rotor-stator pumping element does all the work . . . takes all the wear . . . is easily replaceable.

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This Brighton unit, Model A-110 is an outstanding example of precision design and quality manufacturing. Its overall measurements are 40" wide x 60" long and 108" high. Additional features may be added to meet customers' specific requirements. Write for complete data.

BRIGHTON

COPPER WORKS, INC.
CINCINNATI 14, OHIO

IDEAS

Industrial testing reveals that tubular grinding media cut grinding time 50% . . .

Akron Paint and Varnish Co. finds this to be true by comparing with flint pebbles

Tubular shaped "Burundum" grinding media were announced last year (CHEMICAL PROCESSING, Sept. 1950, page 23). Recent tests at Akron Paint and Varnish Co., Akron, Ohio, give evidence that these media are meeting with expectation, at least in comparison with flint pebbles. Grinding was accomplished in about 50% less time with Burundum than with the pebbles.

Two 25-gal mills of the same shape and speed were employed in these tests. One was filled to a definite volume with Burundum media and the other was filled to the same volume with flint pebbles.



Grinding time to reach an equivalent fineness of grind on the North gage was cut in half with Burundum grinding media

The table shows the results of grinding three materials with Burundum and with flint pebbles. The figures represent number of hours for grind to reach a certain reading on the North test gage (7 for the green tinting solution and the gray Minitnamel, and 6 for the zinc chromate).

| | Burundum | Flint Pebbles |
|------------------------|----------|---------------|
| Green tinting solution | 44 | 76 |
| Yellow zinc chromate | 44 | 90 |
| Gray Minitnamel | 42 | 80 |

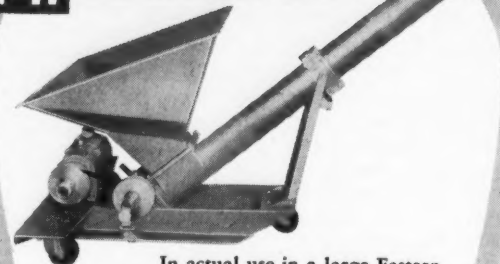
(The maker of Burundum grinding media — The U.S. Stoneware Co., Akron 9, Ohio — reports that similar tests performed by manufacturers of other materials show practically identical results in almost every case.)

Proposed standardization of Fe-constantan thermocouples open to debate . . .

NBS wants reactions of pyrometer users, makers on reference table proposed as standard

The iron-constantan thermocouple, widely used for measurement of temperatures up to 1500°F, is the only type of thermocouple for which uniformity of commercial practice has not been established in this country. Recently, at the request of the Scientific Apparatus Makers of America, NBS has undertaken the job of deriving a temperature-emf

G-W PORTABLE SCREW FEEDER



In actual use in a large Eastern chemical plant the G-W Portable Screw Feeder reduced reaction time by 75%, increased completed batches by 102%. The need for buying a new kettle was eliminated and a saving of several thousand dollars was realized.

Hopper type feeder can be equipped with a volumetric feeding device manually set for a predetermined volume to be metered from hopper to screw conveyor and delivered to mixing vat, etc. Rates of feed from 3½ to 114 cu. ft. per hour.

Why not tell us the materials you handle and the speed and the capacity required? We'll be glad to give you full details on this and other G-W chemical feeders — show you how to save time, increase production, reduce costs.

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When inquiring check CP 4484 on handy form, pgs. 2-3

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CHEMICAL PROCESSING

When inquiring check CP 4483 on handy form, pgs. 2-3

IDEAS

reference table for these thermocouples which would be suitable for adoption as a standard.

Some time ago, after investigations (William F. Roeser and Andrew I. Dahl, J. Research NBS 20, 337 (1938) RP 1080), the Bureau derived a table generally known as RP 1080 which represented the average behavior of the iron-constantan thermocouples on the market. Rather than alter scales of their pyrometers to conform to the actual properties of the thermocouples then being sold, most of the various manufacturers made efforts to develop and make available thermocouples which would correspond to the temperature-emf tables they themselves were using. A number of widely diverse reference tables for iron-constantan thermocouples are still in use as a result of this action.

In an effort to achieve greater uniformity, SAMA adopted the temperature-emf relation known as the 1913 (L and N) table (International Critical Tables 1, 59 (1926); also Tech. Pap. BS 14, 306 (1920-21) T170, Table IV, Col. L.) in 1948 as a tentative standard for iron-constantan thermocouples over the range from 32 to 1400°F. This relation was chosen because it was in wider use than any other. It is, however, not possible to produce a thermocouple which will correspond precisely to the 1913 table over the entire temperature range mentioned. Moreover, any thermocouple which closely matches this table in the range below 1400°F will deviate greatly from it in the range above 1400°F.

SAMA requested NBS to derive a reference table which would be free from these defects. It was felt that such a table should be as close to the 1913 table as possible, yet should represent the properties of an actual commercially available thermocouple.

NBS gathered data from 8 different lots of matched iron and constantan wires submitted by 4 SAMA members. It was found that the spread in the thermal emf's of the iron-constantan thermocouples below 1400°F was not large compared to usual commercial tolerances, even though the iron samples and the constantan samples differed widely among themselves.

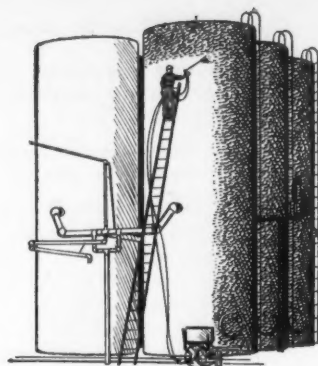
Present preference is to base the new table upon the temperature-emf relation of thermocouple A-1, since this thermocouple deviates least from the 1913 table in the range of normal use.

The question now arises whether the field of use of this proposed new table can be broadened through industry-wide acceptance. The Bureau doesn't want to support any new table that might cause hardship to suppliers and users of iron-constantan thermocouples who have based their operation on the RP 1080 table. It is felt that the views of all interested parties should be obtained as a prerequisite to the adoption of such a table. Questions that naturally occur if the proposed table can be adopted are the following:

- 1) Is industry-wide standardization on a single reference table for iron-constantan thermocouples desirable?
- 2) Is the 1913 table, or a close approximation to it, acceptable for these purposes?
- 3) What degree of hardship will be occasioned by abandonment of the RP 1080 table?

The reaction of producers and users of pyrometers is a matter of interest to the Bureau, and replies to the above questions, as well as related comments, can be addressed to the National Bureau of Standards, Temperature Measurements Section, Washington 25, D.C.

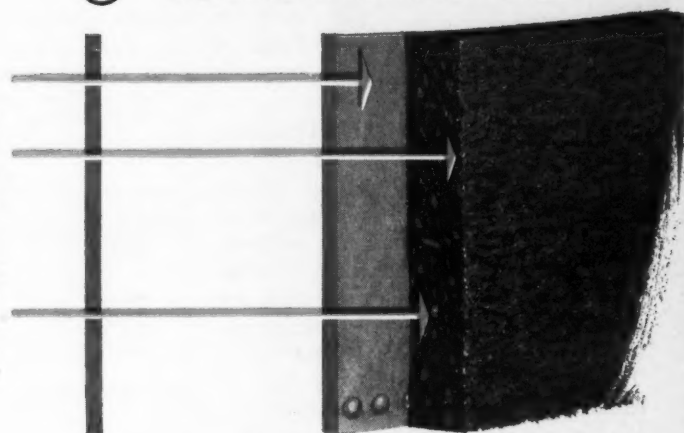
MAY, 1951



one coat of **Insul-Mastic** type "D"
prevents

- ✓ **corrosion**
- ✓ **heat loss**
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- **Insul-Mastic Coating, with its high Gilsonite content, prevents corrosion by stopping moisture, acids, alkalis and salts from contacting the surface under the coating.**
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Insul-Mastic Type D insulation requires no vaporseal or further protection. It will not absorb moisture and thus will retain full insulating efficiency throughout its life. As an insulation, it has a K factor of .36 which is approximate to that of cork board. Insul-Mastic Type D is spray applied and will adhere at any angle without mechanical support. Type D can be used on surfaces having a temperature range from minus 40° F., to plus 300° F., without deterioration.

Insul-Mastic Type D has been used to prevent heat loss on oil storage tanks, paper pulp digesters, liquid sugar tanks, warm air ducts, prefabricated metal buildings and many other types of equipment, piping, etc. It controls condensation on cold water intake pipes for boilers, in railroad freight cars, on building panels, corrugated metal roofs, and cold air ducts, etc.

Write for our booklet, "INSUL-MASTIC TYPE D INSULATION" and for the name of your nearest Insul-Mastic representative.

Think first of the coatings that last!

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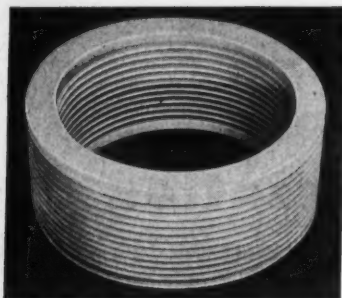
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When inquiring check CP 4486 on handy form, pgs. 2-3

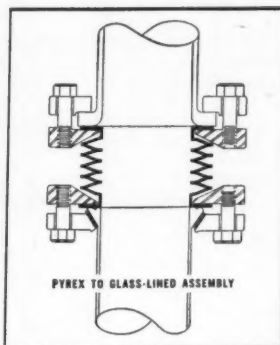
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**Tough • Heat-Resistant
Absolutely Chemical-Proof**

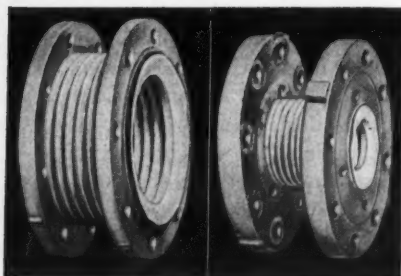


If your problem is thermal expansion, vibration, misalignment or any other condition demanding a flexible, chemical-proof piping section, then USG's Chemiseal Teflon Expansion Joints can save you money. They're tough, long-lasting and completely impervious to chemical attack.

Fabricated by a special USG process, Chemiseal Expansion Joints accommodate axial contraction and expansion or any reasonable amount of misalignment or vibration without danger of cracking or bursting. They're designed for 25 lb. pressure and are serviceable in a wide temperature range (-150° F. to 400° F.). Remember—Teflon is so inert chemically that it cannot be attacked by nor contaminate any known chemical used commercially.



Chemiseal Teflon Expansion Joints are available for any type of equipment and for a wide variety of operating conditions. Joints are normally supplied with suitable integrally-gasketed flanges drilled to 150 lb. A.S.M.E. standard. Exact requirements must be specified, so we'll be glad to send you Catalog No. 212 containing complete information.



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IDEAS

**1946 accident frequency rate
12.87 per million manhours;
1950 rate 4.60 . . .**

Sohio finds that safety education plus proper use of safety equipment pays off

A stepped-up safety program reaching into all branches of manufacturing end of its business has enabled Standard Oil Company of Ohio to reduce accident frequency rate for its refineries from 12.87 accidents per million manhours in 1946 to 4.60 in 1950, a reduction of more than 65%. Believing that accident prevention is largely a function of the degree to which safety is ingrained in all personnel's thoughts and actions, company officials emphasize safety education for supervisory, production and maintenance personnel, as well as extensive use of safety equipment and instruments in company's five refineries.

Safety engineers devote much time in promoting safety consciousness. They supply much of the material that is employed in frequent safety meetings in various departments, on bulletin boards and payroll enclosures. A recently issued booklet explains safety rules of the manufacturing department. Reports of disabling accidents from the plant or other plants are often brought up and discussed.

Safety meetings are also held for supervisors, or the subject is discussed in regular operating meetings. New programs, techniques and procedures are devised and/or discussed in such meetings. Active union-management committees have been established, and workers are included on accident investigating committees.

Each refinery is supplied with a full complement of gas masks, hose masks, respirators, goggles, safety hats, combustible and toxic gas detectors and many other personal protection items.

All employees working near possible falling objects must wear safety hats — usually McDonald Type T aluminum alloy headgear. Use of these has paid dividends. For



Portable gas detection instruments vital part of effective safety program

instance, a jagged 9 oz piece of steel recently fell 56 ft and struck a supervisor on top of his McDonald hat. The piece put a 3/4" dent in the hat, but the man suffered only a slight scalp cut. It is interesting to note that he was 8' away from the tower, a distance usually considered safe, but the steel angled away from the tower to hit him. The incident was the subject of company-wide poster.

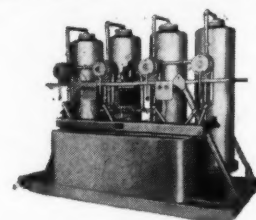
Gas compressor houses are equipped with automatic, continuous sampling, combustible gas alarm systems. These

PURE WATER AT LOWEST COST

WITH
BARNSTEAD
DEMINERALIZERS

FOR

- Mirror Silvering
- Anodizing
- Boiler Feedwater
- Plating
- Cosmetics
- Television Tubes
- Battery Maintenance
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- Aircraft Research
- Washing Ampules
- Laboratories
- Pharmaceuticals



In countless processes better results are obtained, when pure water — free from harmful minerals is used. In fact, hundreds of manufacturers have already found that they save money, have fewer rejects and get a better product with Barnstead Demineralized Water. The cost is extremely low — as little as 5c per 1000 gallons. Operation is very simple. And with a Barnstead Demineralizer, you get the benefit of more than 75 years of specialized experience in water purification. Write for Catalog #123.

THESE FIRMS — AND MANY OTHERS —
ARE NOW USING BARNSTEAD DEMINERALIZERS

Air Reduction Sales Co. — American Mirror Works — Haloid Corp. — Eitel-McCullough Company — Tung-Sol Lamp Works — Remington-Rand — R.C.A. — National Bureau of Standards — Wyeth, Inc. — General Electric Co. — Polaroid Co. — Hercules Powder Co. — Standard Oil Development — International Harvester Co. — Koppers Co. — Behr-Manning Co. — Ford Motor Company — University of California — Marquardt Aircraft — Sarkes-Tarzan Co. — Dewey & Almy — Monsanto Chemical Co.

PROMPT DELIVERIES ON MOST MODELS

Models from 5 to 1000 gallons per hour

Barnstead
STILL & STERILIZER CO.

66 Lanesville Terrace, Boston 31, Mass.

When inquiring check CP 4488
on handy form, pgs. 2-3

CHEMICAL PROCESSING

IDEAS

give visual and audible indication when gas concentration exceeds a safe figure. Butane pump houses have similar systems.

Besides these fixed instruments, Sohio uses MSA Explosimeters, portable gas detection apparatus, to check atmospheric conditions in other possible danger spots. With this instrument, it is possible to check hard-to-reach spots because a 50' sampling line may be used. Calibrated to give direct readings for many types of combustible gases and vapors, the instrument has proved to be advantageous for checking tanks, vessels, towers, manholes and other points before welding or other "hot" work is started.

Petroleum storage tanks are always cleaned strictly according to methods recommended by the American Petroleum Institute. Tetraethyl lead tank cleaning teams are furnished with, and required to wear, API-recommended hose masks which supply them with fresh air under positive pressure from an uncontaminated source. The masks are always worn in these tanks even though the tanks are free of gasoline vapor hazards.

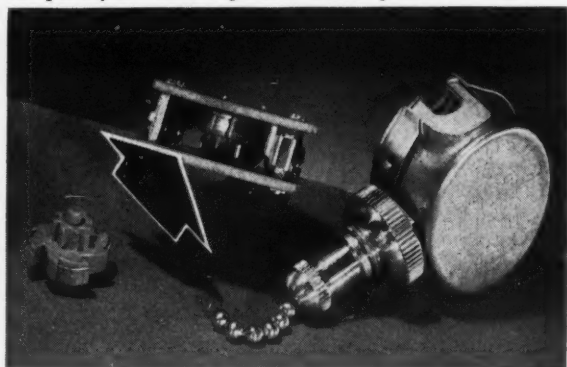
(Basic information courtesy of Mine Safety Appliances Company, Pittsburgh 8, Pa.)

Replacement of two materials with alkyd compound saves labor, cuts mold costs . . .

alkyds rapidly molded in self-contained presses that are completely automatic

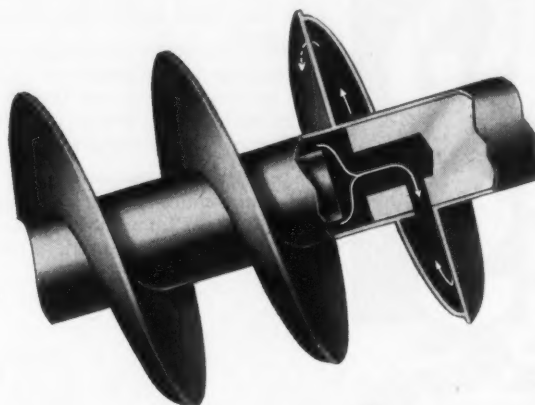
Versatility of alkyd molding compound eliminated necessity for using two different materials in production of a lighting circuit switch. Used to mold the ratchet (see foreground of illustration), the required arc resistance and non-tracking qualities were obtained with one material. Production time was saved even further by the alkyd plastic's ability to mold four times as fast as other thermosetting plastics. This means lower tooling costs, since smaller molds could produce as many parts of alkyd as were previously produced from larger, more costly molds.

The alkyd material can be molded by self-contained, completely automatic presses and requires less labor as



Switch ratchet is molded from alkyd compound well as less heat and pressure than standard plastics. In performance, the alkyd ratchet helped win Underwriters' Laboratories approval. It successfully completed 24,000 operations at maximum load. Partly because of the alkyd material, the switch manufacturer, McGill Mfg. Co., Inc., guarantees it not to fail. Switch is rated at 6 amperes, 125 volts. (Alkyd molding compounds used in this application are a product of Plaskon Div., Libbey-Owens-Ford Glass Co., Dept. CP, Toledo, Ohio).

A great new advancement in heat exchangers...

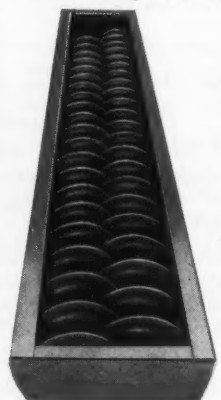


THE holo-flite PROCESSOR (HOLLOW-FLITE)

A simpler, more compact way to cool slurries, solids or pastes—in continuous flow!

Do you have processes where slurries, solids, pulps or pastes must be cooled or cooked? Do you know you can now handle such processes—in continuous flow—in as little as 1/5th the space required by other types of heat exchangers—and with many other important advantages?

The newly-developed HOLO-FLITE Processor is the answer!

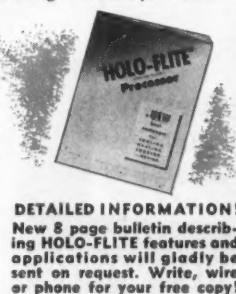


what IT IS!

Basically the HOLO-FLITE consists of two or more flights of hollow-bladed screw conveyors. The product to be processed moves in a trough around the conveyor screws. The heat-transfer fluid circulates through the hollow blades and shafts of the conveyor. The product is constantly rotated into, around, under and over the blades and shafts through which the heat-transfer fluid is circulating, assuring quick, uniform heat passage between the two mediums—as the product is continuously moved along in a bulk-flow without interruptions!

Get the complete story on HOLO-FLITE savings and how this new advancement can simplify your processing operations. It is backed by the same organization that pioneered COTTRELL Precipitators and MULTICLONE Collectors—your assurance of complete dependability.

*Reg. T.M.



DETAILED INFORMATION! New 8 page bulletin describing HOLO-FLITE features and applications will gladly be sent on request. Write, wire or phone for your free copy!

why IT'S BETTER!

The HOLO-FLITE principle provides many important advantages in modern processing operations...



ITS LARGE HEAT-TRANSFER SURFACE requires far less space—as little as 1/5th the space required by other heat-exchange equipment. Further, flights can be "stacked" as high as desired to save floor space, simplify installation!



ITS SLOW ROTATION IS SO GENTLE that granular and powdered solids are handled with no dusting—little or no particle abrasion. Result—no dust recovery problems... simple, inexpensive installation.



IT IS ADAPTABLE to a wide range of applications—handles solids, pulps, pastes and slurries with equal ease. Heat transfer agent can be refrigerant, water or other fluids to provide a wide range of temperatures. Cooled products can be packed directly from HOLO-FLITE discharge, saving time, space and additional handling.



IT CAN BE DESIGNED to handle virtually any capacity by varying the diameter and length of the flights, and the number of "tiers."

WESTERN Precipitation CORPORATION

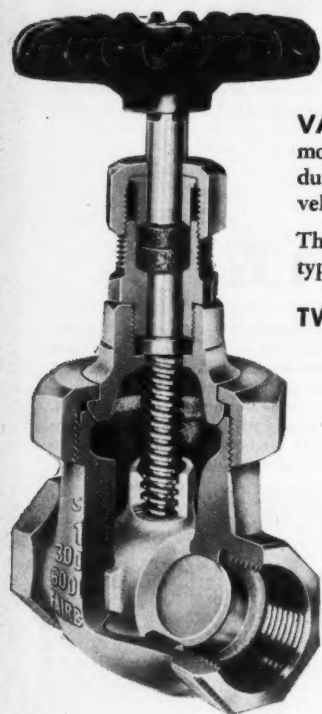
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The 0260—300 pound Bronze Gate Valve—is a typical valve, a typical value.

TWO-PIECE UNION BONNET...

Strength, quick easy disassembly, no sliding or scraping of seat between body and bonnet.

RADIAL SEAT OF UNION BONNET...

Leakproof body-bonnet joint, rigid alignment.

SOLID NICKEL ALLOY WEDGE...

guided for tight closure, corrosion resistant.

Fig. 0260 BRONZE GATE VALVE—
NON RISING STEM
300 lbs. steam working pressure at 550°F.
(0264—BRONZE GATE VALVE—RISING STEM)

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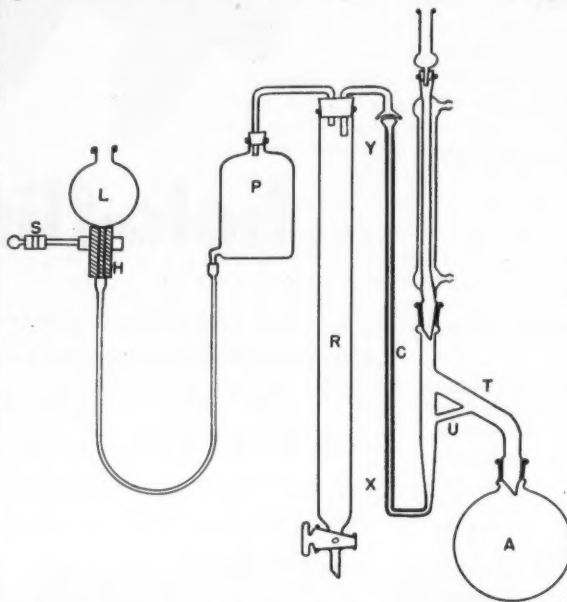
IDEAS

NBS develops apparatus for precise determination of water in rubber...

rapid and simple; also applicable to leathers, textiles, oils, dried foods, other organics

NBS announces an improved apparatus for precise determination of moisture in rubber. It also promises to provide a rapid and simple means for accurate water determination in leathers, textiles, oils, dried foods, and other organic materials.

Apparatus uses the method which involves the formation of a minimum-boiling azeotrope (constant-boiling mixture) of an immiscible organic liquid with the water present in the material, distillation of the azeotrope,



NBS apparatus for moisture determination in rubber and other organic materials:

- | | |
|------------------------|-------------------------------|
| A — Distillation Flask | C — Calibrated Capillary Tube |
| T — Trap | P — Water Bottle |
| U — Overflow Tube | S — Clamp |
| L — Leveling Bulb | H — Threaded Tube |

and separation of the water as a separate phase for volumetric determination. Decomposition of the sample is prevented by the relatively low temperature at which the distillation takes place.

Problems encountered with other devices of this type are not met here. These have usually included difficulty in reading accurately the volume of water collected and poor separation of the water from the organic liquid.

NBS apparatus consists essentially of a distillation flask in which the sample is heated, a reflux condenser with a drip tip, a trap for collecting the water which separates out in the condenser, a capillary tube for measuring the distilled water, and a waste receiver with a drain stopcock at the bottom. The waste receiver is connected to a bottle of water, which in turn is connected by rubber tubing to a leveling bulb.

Results obtained with the apparatus on samples containing about 1% water have been of the same order of accuracy as those obtained with the Karl Fischer technique. The method has been evaluated in several experiments, designed for statistical analysis, in which the

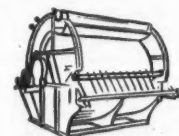


... helps you pick the right synthetic cloth for your filter

This handy new six-page folder contains a selector chart showing which fabrics can handle what materials... samples of six different FEON fabrics... technical data on their properties... and case-history reports showing typical uses of the various fabrics and weaves. All the information you need to pick the right synthetic filter cloth for your job. Send for it today!

FEON FITS YOUR FILTER

Strong, chemical- and bacteria-resistant, and versatile enough to handle almost any job, FEON fabrics are available today in a variety of weights and weaves, as yard goods, or tailored to fit any type or make of filter. Send us the facts on your job today. We'll be glad to quote prices and make recommendations.



FILTRATION FABRICS DIVISION
FILTRATION ENGINEERS, Inc.
155 Oraton Street • Newark 5, N. J.

When inquiring check CP 4491 on handy form, pgs. 2-3.

CHEMICAL PROCESSING

IDEAS

effects of a number of possible variables were studied. Findings show that when the procedure is applied to rubber there is a standard deviation of 0.023%. For accurate work, allowance must be made for incomplete recovery of all the water in the sample. In the case of rubber, recovery is about 96%.

(Information received from National Bureau of Standards, U.S. Department of Commerce, Washington 25, D.C.)

Atomic standards of length now available . . .

wavelengths of green light emitted by mercury 198 more sharply defined than red light from cadmium

NBS and AEC have recently announced the availability of an ultimate standard of length for qualified Government, industrial, and educational laboratories in this country and abroad who are engaged in precision length measurements and related research.

The wavelengths of green light emitted by spectroscopic lamps containing a single, pure isotope of mercury (mercury 198) and measured by the optical technique of interferometry is the basis for the new standard of length. A wavelength near 21 millionths of an inch is consistently emitted with a reproducibility greater than 1 part in a billion. Length measurements based upon it can readily be made with an accuracy of 1 part in 100 million, and this is expected to be increased to 1 part in a billion.

Advantage here, over using the wavelength of red light emitted by cadmium as standard, lies in the fact that wavelengths of light from mercury are much more sharply defined. (Requests for information should be addressed to the Coordinator of Atomic Energy Commission at the National Bureau of Standards, Washington 25, D.C.)

Simultaneous recording of 2 variables aids coating, drilling operations . . .

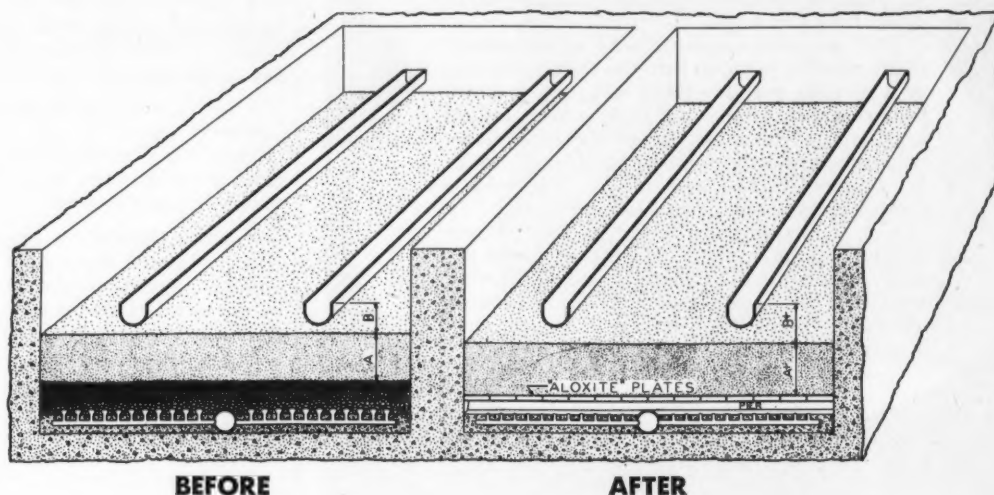
method measures effectiveness of mechanical coating process, correlates records in rock drilling

A technique for simultaneous recording of two independent variables, such as radioactivity and rock strata resistance in underground drilling operations, has recently been developed. Another application of the method is measurement of effectiveness of a mechanical coating process on a transparent film or other base. In this case, one record shows the density of base (plus coating) as it emerges from the process, while the other shows density before coating. The arithmetical difference provides a quantitative measurement of coating density.

In drilling operations, separate measurements have had to be taken for two sets of data by making two "passes," one up and one down. With the new technique, a two-pen electronic recorder enables drillers to get the same results with only one "pass." Also, under previous systems the speeds of descent and ascent of drilling apparatus had to be equal, causing frequent errors when correlation of separate records was attempted. Correlation is automatic.

Other applications of the technique are in spectrometric analysis, and in meteorology for simultaneous recording of wind velocity and direction, and of tide levels and currents. (Minneapolis-Honeywell Regulator Co., Brown Instruments Division, Wayne & Roberts Avenues, Philadelphia 44, Pa.)

Planning to rebuild old shallow filters?



ALOXITE underdrains offer "extra dividend" features.

For operators of shallow filters, ALOXITE porous bottoms give all the basic benefits that follow elimination of graded gravel support. Moreover, they pay "extra dividends" by solving certain problems inherent in operating such units:

- When rebuilding old-style filters (see "Before") to get proper wash rates, these porous plates permit you to lower filter media. Back washing can then be stepped-up to use greater available distance (B+) to wash gutters. And with

the "After" design you profit by a simultaneous increase in operating head for filtration. Where necessary, the filter media bed can be deepened (A+) as porous plate construction supplies a lot of added space.

- In designing new filters, topography may be such that available head is very limited and critical. Here the extra head provided by the construction of ALOXITE filter bottoms may solve the problem.

When seeking ways and means of improving your filters, don't overlook ALOXITE aluminum oxide porous plates. For shallow filters — or any other type of filter — underdrains of this type have proved to be distinctly superior.

EVIDENCE: There are nearly 300 installations of ALOXITE filter bottoms in operation today — some of which are in their 15th year of service!

REASONS: You'll find them in our new 56-page booklet "Porous Media for Filtration and Diffusion." It's a complete reference handbook — contains a wealth of useful charts, graphs, and photos. A copy is yours for the asking.



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Dept. S-51, Refractories Div.

Perth Amboy, New Jersey

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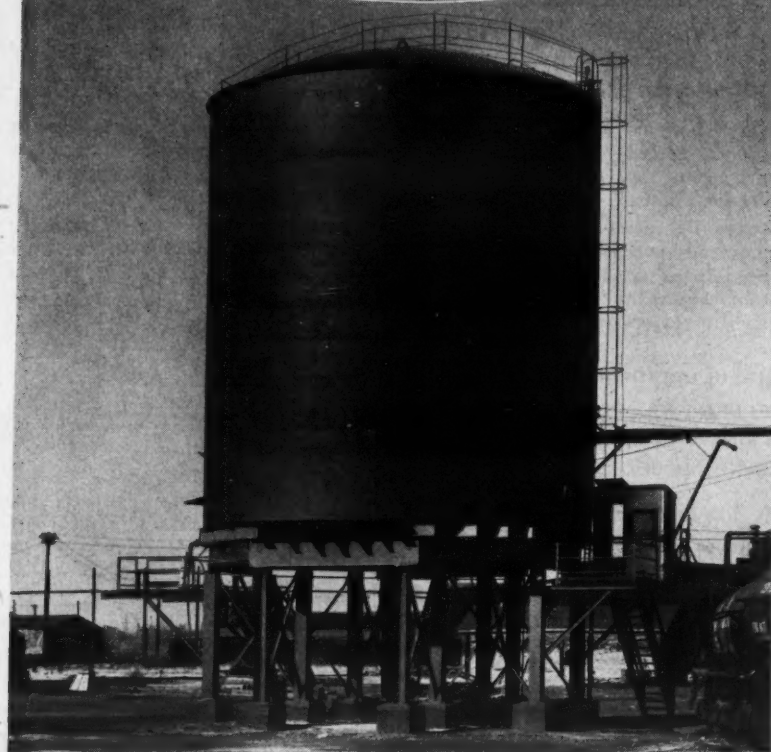
When inquiring check CP 4492 on handy form, pgs. 2-3

Store 77.7% sulphuric acid in Horton welded steel tank

The tank shown below is located at a chemical plant in northern Illinois. It's 31½ ft. in diam. by 35 ft. high.

77.7 per cent sulphuric acid manufactured at the plant is pumped into the tank at the rate of 150 tons per day (tank capacity is 1500 tons of acid). Since the tank is mounted on a grillage 15 ft. above the ground, acid flows from it by gravity into tank cars or tank trucks for delivery to the steel mills. The acid is used there principally in pickling steel.

The self-supporting umbrella roof shown below is popular for acid storage tanks because, when it is used, there are no supporting columns inside the tank. When you need Horton welded steel storage tanks for the storage of acid, or any other liquid, get an estimate from our nearest office.



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| Birmingham 1 | 1533 North Fifth St. | New York 6 | 3314—165 Broadway Bldg. |
| Boston 10 | 1007—201 Devonshire St. | Philadelphia 3 | 1650—1700 Walnut St., Bldg. |
| Chicago 4 | 2116 McCormick Bldg. | Salt Lake City 4 | 507 West 17th South St. |
| Cleveland 15 | 2212 Guildhall Bldg. | San Francisco 4 | 1545—200 Bush St. |
| Detroit 26 | 1533 Lafayette Bldg. | Seattle 1 | 1307 Henry Bldg. |
| Havana | 402 Abreu Bldg. | Tulsa 3 | 1649 Hunt Bldg. |
| Houston 2 | 2151 National Standard Bldg. | Washington 6, D. C. | 1158 Catritz Bldg. |

Plants at BIRMINGHAM, CHICAGO, SALT LAKE CITY, and GREENVILLE, PA.

When inquiring check CP 4493 on handy form, pgs. 2-3

IDEAS

Technique measures corrosion as it takes place . . .

scanning method similar to TV eases and speeds study of entire surface of sample

Development of a new technique of measuring effects of corrosive solutions allows measurement as corrosion takes place, regardless of the metal involved. Permitting easier and faster study of the entire surface area of a corrosion sample, the technique can be applied to investigation of cathodic protection, corrosion inhibitors, stress corrosion, and in fundamental corrosion studies.

The new method is similar to television scanning. The laboratory sample on which corrosion occurs is a metal cylinder. It is submerged in some corrosive solution, rotated several hundred times a minute, and scanned with a stationary probe electrode.

The probe electrode, a plastic arm containing 11 silver wires, is placed about 0.02" away from the submerged cylinder. It picks up the minute electrical currents caused by corrosion. These currents can be amplified and viewed on an oscilloscope screen, or photographed for later analysis. (Developed at the Armour Research Foundation of Illinois Institute of Technology, Technology Center, Chicago 16, Ill., under sponsorship of the National Advisory Committee for Aeronautics.)

Fourteen ways to lower operating costs of electric trucks . . .

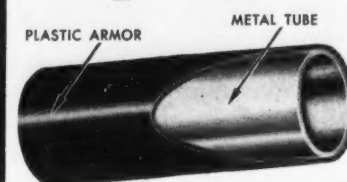
most of them might apply to all types of trucks

Fourteen ways to lower operating costs of electric industrial trucks have been outlined by the Automatic Transportation Company. It is reported that planned preventive maintenance assures reduced service budgets, longer truck life, and less down-time while trucks undergo repairs. Program for 1-truck or fleet operations, based on studies of successful techniques, includes these recommendations:

- 1) Loads should suit the truck. Operators should be taught that truck capacity varies with load length, and that continual overloading causes serious breakdowns and plays havoc with tire bills. Trucks with ample reserve capacity should be utilized.
- 2) Floors should be kept in good condition. Bad surfaces cause damaging strains and shocks, and tires suffer unnecessarily.
- 3) Tires should be replaced when they develop flat spots or when pieces of rubber are gouged out. Stretching tire life damages the truck, costing far more in repairs than the savings it makes.
- 4) Only a mechanic should make repairs. When something goes wrong, operators should call the mechanic. Trucks should not be pushed or towed without the mechanic's orders.
- 5) Operators should be trained thoroughly in proper use of equipment assigned them. Whenever possible, each operator should work permanently with the same truck.
- 6) Full information should be obtained for a new truck. The manufacturer's service representative should demonstrate it for operators, advise regarding maintenance force, explain spare parts needed, and make sure no damage was incurred in shipment.
- 7) Mechanical maintenance program should follow a regular schedule. A series of mechanical work sheets or

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Here's an instrument tubing that lowers your costs by eliminating external corrosion. It's Dekoron tubing—plastic armor, polyethylene or vinyl, extruded to a 1/32nd-inch thickness over a metal core—steel, aluminum or copper.

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LONG LIFE. In an iso-propanol plant, copper lines with bronze fittings were destroyed in less than six months by moisture and fumes. Dekoron lines are in excellent condition after three years service.

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WRITE FOR THE DATA SHEET. "Dekoron—a better kind of corrosion-resistant instrument tubing." Tells how Samuel Moore & Company coats customers' tubing and lowers costs. Just mail the coupon below.

A-3991

Dekoron tubing

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Dept. C5, Samuel Moore & Co., Mantua, Ohio.

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When inquiring check CP 4494 on handy form, pgs. 2-3

CHEMICAL PROCESSING

tags can be used prescribing services to be performed, and a fleet maintenance record can be kept to show the life expectancy of important units of the truck. This aids making necessary changes in advance in order to avoid complete breakdown and lost operating time.

8) Trucks need a monthly lubrication and mechanical check-up, which should follow removal of dirt and grit from the undercarriage. Fleet operation calls for a cleaning rack in a small room or enclosed area. A weak alkaline solution applied under steam pressure does a good cleaning job, and compressed air is best for drying. A large blow-up of the manufacturer's lubrication chart



(as in photo) will aid maintenance men with lubrication. Check-up should include putting the truck through all its paces at all speeds with normal loads.

9) Semi-annual mechanical checks and lubrication should be more extensive. Cleaning and repacking wheel bearings, changing drive axle grease or oil, and other services not assigned short-term check-ups should be included.

10) Electrical checks should be conducted on a weekly, monthly, and semi-annual basis. Weekly should include tightening loose fittings and replacing worn and damaged ones. All electrical functions should be closely observed monthly, and complete electrical inspection should be made semi-annually. Tightness of electrical connections and wire insulation should be noted carefully at all times.

11) Battery care is important. Overwatering will weaken the electrolyte, and if it spills over from the battery case, it will corrode truck parts. Flushing the battery is a necessity to keep it clean, and should be part of the weekly check. Only properly maintained automatic charging equipment should be used.

12) General overhauls should be scheduled according to operating conditions — such as the number of hours the truck operates daily, plant conditions, and driver's ability.

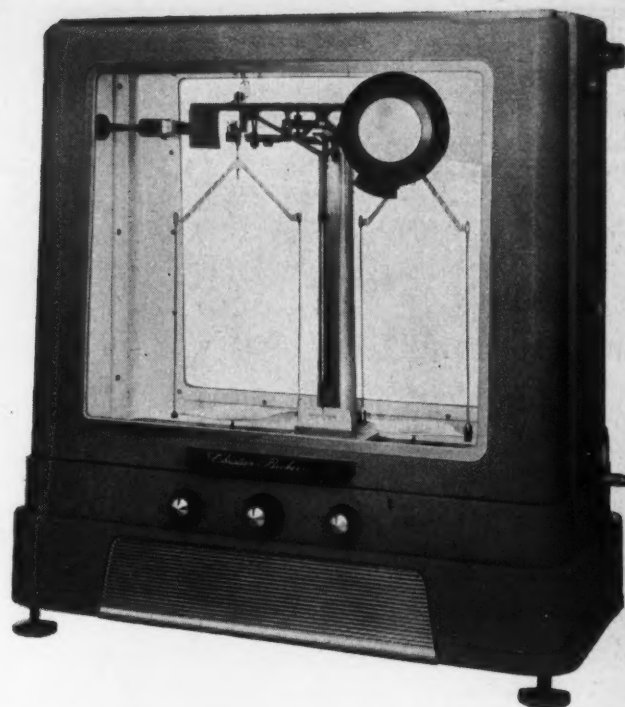
13) A weekly log for each truck should be kept, showing a record of inspections, lubrications, and cleanings.

14) Last and not least, the above program should be based on one shift a day and favorable operating conditions. Under rough conditions — such as bad floors, more than average dirt, or more than one shift a day duty — trucks require more frequent use of some, or all, of these checks.

Present production emergency and restrictions on materials will make industrial trucks and parts harder to obtain, consequently the need for such a program as the foregoing. (Information received from Automatic Transportation Company, Chicago, Ill.)

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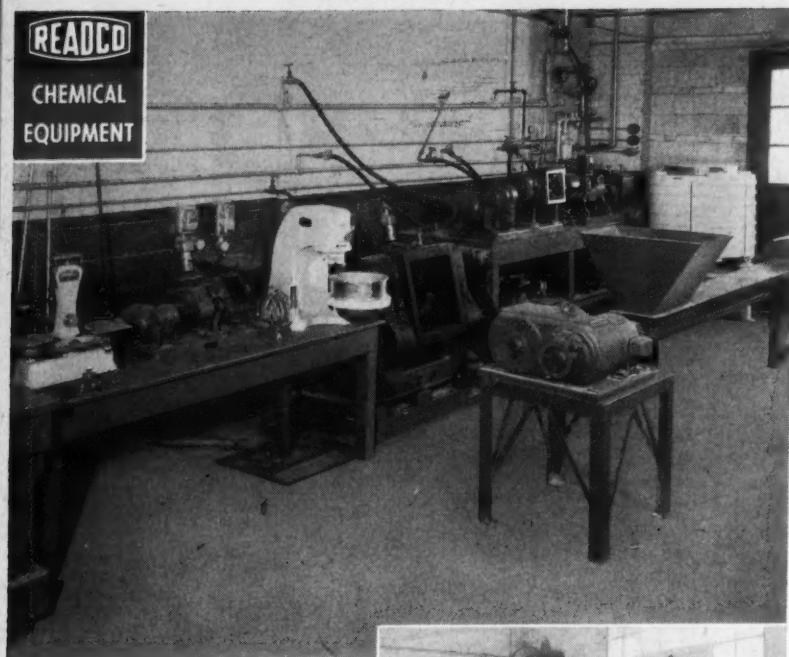
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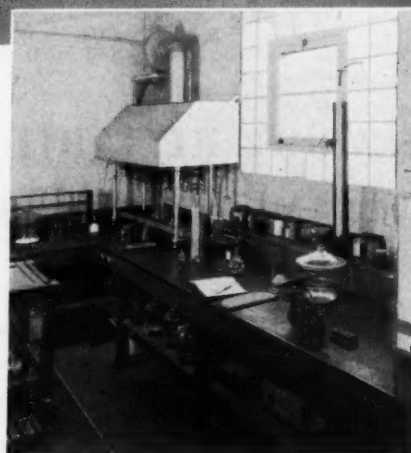
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READ STANDARD
CORPORATION

When inquiring check CP 4496 on handy form, pgs. 2-3

IDEAS

Improved conductor bar insulator is molded from Fiberglass-reinforced polyester . . .

part is much more resistant to shorting than metal-reinforced phenolic previously used

The Cleveland Tramrail Division of Cleveland Crane & Engineering Company is using a Fiberglass-reinforced polyester resin for conductor bar insulators on overhead material handling systems. The insulators were previously manufactured from phenolic resin, but had to have two metal inserts to give sufficient strength. The new insulators are strong enough without the inserts which were always a potential source of shorting. More than 150,000 of these insulators have been in use since July, 1949, and not one failure-in-use has been reported.

One of these muffin-size insulators, molded by Laminated Plastics, Inc., of Cleveland, is placed every 5' along the conductor bar. Hundreds of them may be used in just one installation. If one shorts, it is difficult to detect which one it is and, in the meantime, the whole system may come to a standstill.

Much of the shorting in the phenolic parts was due to hairline cracks and frequent loosening of inserts. Shorting resulted when moisture, acid or various types of fumes seeped into the cracks.

Although the new part has to support only about 6 lb dead weight, it is designed for much more strength in case a careless maintenance man should step off on one as he walks along the overhead tracks.

(The resin used in making Glastic, the trade name of the reinforced polyester, is Laminac, a product of American Cyanamid Company, 30 Rockefeller Plaza, New York 20, N. Y.)

Coated cardboard replacing metal containers for engine oil . . .

water dispersions of vinyl type resins also suited for treating packaging materials that contact foods

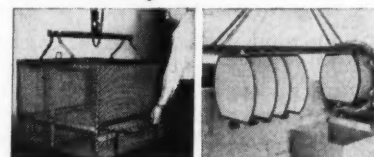
Although shortages of critical metals abroad have hampered packaging companies since World War II, some have utilized their ingenuity to replace containers and packages that heretofore were based primarily on metals.

A French manufacturer is producing cardboard containers for holding motor oil and a variety of other petroleum products. Excellent grease-proof characteristics are imparted to the container by coating its inside with Geon polyblend latex — a vinyl resin plasticized with Hycar nitrile rubber. Pouring spout is closed by heat sealing and then crimping a metal clip over the lip to further in use for some time, and it is reported that all the manufacturer's customers are well satisfied.

Coatings of this type may be used in contact with products intended for human consumption with no danger of plasticizer extraction. This is because Hycar nitrile rubber (the plasticizing ingredient) is polymeric.

Several outstanding characteristics of Geon polyblend latex that should be of interest to packaging specialists are: 1) absence of ester type plasticizers which are usually objectionable in food packaging because of the danger of imparting odor or toxicity; 2) low rate of moisture vapor transmission and excellent grease resistance; 3) adaptability

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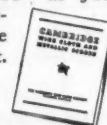


for processing your products or materials, in bulk, through liquids, heat, gases or corrosive agents.

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OFFICES IN PRINCIPAL INDUSTRIAL CITIES

When inquiring check CP 4497 on handy form, pgs. 2-3

CHEMICAL PROCESSING

IDEAS

to conventional coating equipment and techniques; and 4) safety factor in usage since Geon latices are water dispersions of vinyl type resins containing no flammable solvents.

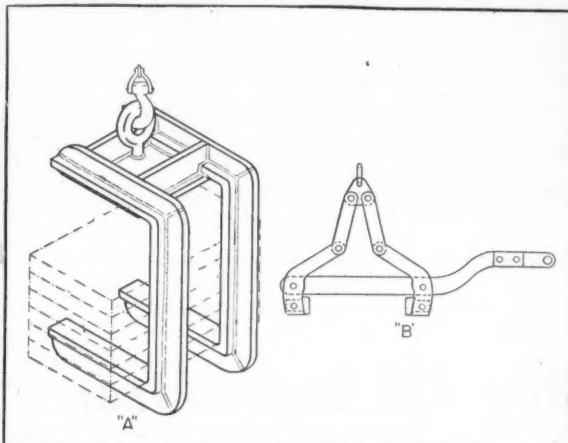
(Additional information on these coatings can be obtained from B. F. Goodrich Chemical Company, Dept. CP, 324 Rose Bldg., Cleveland 15, Ohio.)

Plant's shop can make own clamps to lift, move 200-lb bars, similar difficult loads . . .

bars stacked on pallet-blocks; device slips under loads as a fork-truck would

Manual lifting of 200-lb bars of such metals as phosphor bronze, nickel silver, cupro nickel, and beryllium copper alloys is eliminated by a simple device that can be adapted to various products by varying the dimensions. Typical of such items are rubber, roofing material, lumber, textiles, paper, and plastics.

In plant of metal company where the device originated, six bars are carried at a time from shears to flat breakdown to annealing and back. The 200-lb bars are



Pick-ups lift bars, lumber, paper, and textiles

stacked on pallet blocks; when a load is to be moved, the pick-up device slips under the load much as a fork truck would, and an electric hoist or crane picks up and transports the loaded element. Previously at this plant, bars were hand loaded into lifting mechanisms. The eye which engages the hoist hook is mounted toward the open end of the device so that center of gravity tilts load back and cradles it, thus preventing it from spilling.

As indicated in drawing "A" the lifting element resembles two giant C-clamps, welded in parallel. Device is constructed by bending two flats into C shapes, reinforcing with additional flats welded perpendicular to the outer sides of the C flats, and joining two by welding connecting members as indicated.

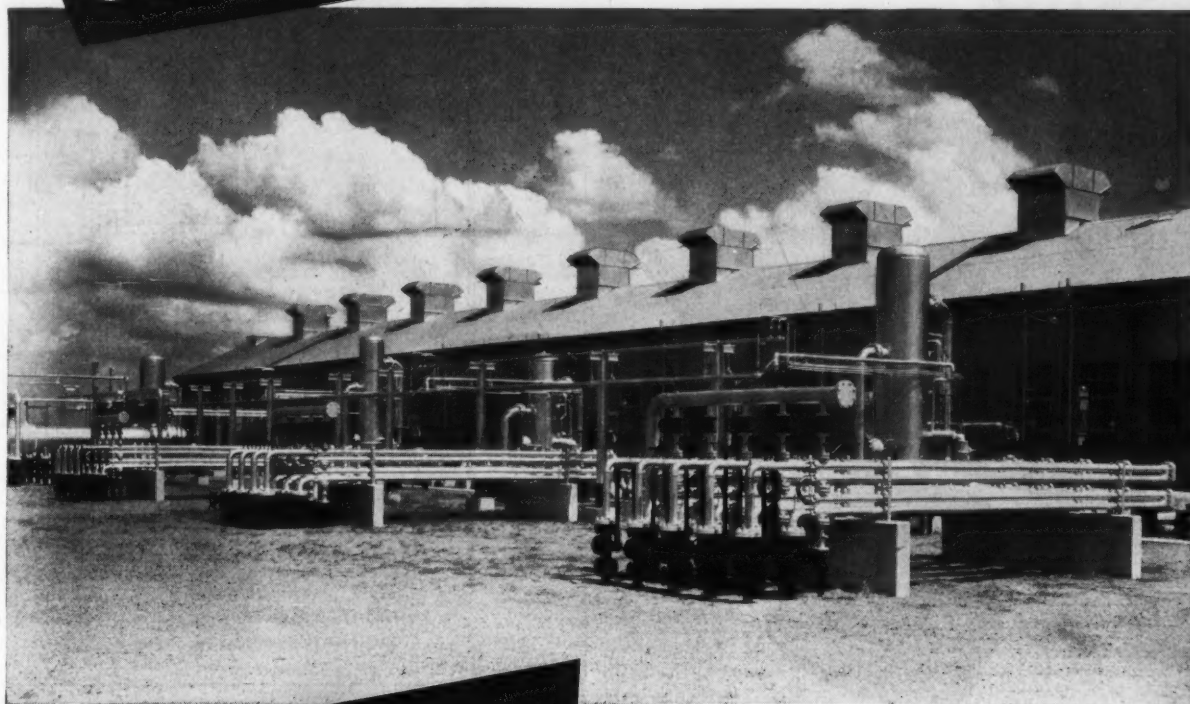
A second device "B" has been designed for handling individual bars when feeding them into or taking them out of machines. This method operates by the tong principle, and permits one man to handle individual bars when feeding machines or stacking pallet blocks.

(Self-loading pick-up elements are a development of The Riverside Metal Company, Dept. CP, Riverside, N. J., and can be easily adapted to specific requirements of other companies by varying dimensions to fit products handled.)

MAY, 1951

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in **your** plant



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sectional hairpin heat exchangers

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The sections can be used in one bank after another — on different duties — and different products. A bank can even be broken up and the sections shipped to two or more plants, miles apart, re-assembled and reused. Sections not in use serve as "stores" for other sections on stream. They are never obsoleted by changes in duty or plant re-arrangements. You can use and reuse them until they are completely worn out. Estimates and quotations furnished promptly. **Write for Bulletin No. 481.**

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When inquiring check CP 4498 on handy form, pgs. 2-3



BUILDERS SHUNTFLO is leak-proof as the steam line itself. A magnetic drive couples the steam metering mechanism to the counter mechanism. There's no stuffing box to leak or drip . . . no packing to adjust or replace . . . nothing to bind or cause friction inaccuracies. Here's another big reason why Shuntflo is the choice of so many industries, commercial buildings, and district heating companies. Installs in 1" to 14" lines. For complete information and Bulletin 400F-1, address Builders-Providence, Inc. (Division of Builders Iron Foundry), 387 Harris Ave., Providence 1, R. I.



Shuntflo Steam Meter in leading aircraft plant.

BUILDERS makes a complete line of flow meters and controllers for liquids, steam, air, gas, and dry materials . . . mechanical and differential . . . including The Venturi Meter and Chlorinizers (chlorine gas feeders).

BUILDERS-PROVIDENCE

When inquiring check CP 4499 on handy form, pgs. 2-3

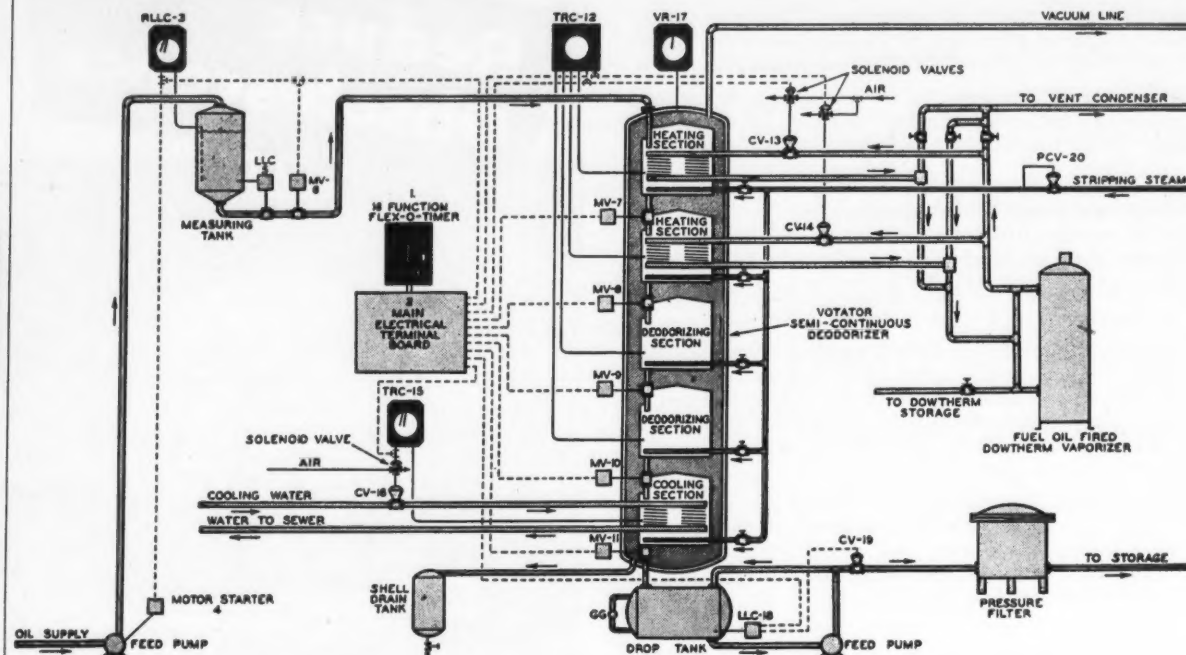


Figure 1. Schematic diagram of the Votator semi-continuous deodorizer for deodorization of edible oils.

RLLC-3—Recording liquid-level controller with pressure measuring element.

TRC-12—Temperature recording (strip chart) controller.

TRC-15—Temperature recording controller.

MV—Motor valve operator

CV—Control valve

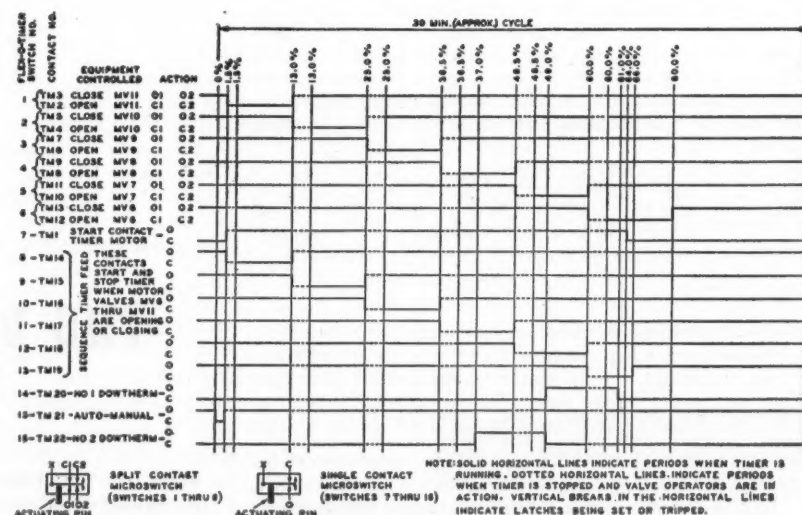
LLC-18—Two-position ball float switch

LLC-5—Low level safety valve.

Instrumentation of Edible Oil Deodorizer Stresses Automatic Programming

Time cycle controller affords efficient operation of deodorizer by controlling the sequence of operations

AN outstanding example of automatic control of sequential processing steps is to be found at a south-eastern plant manufacturing margarine and shortening. An intermediate step in their process is the deodorization of edible oil components to remove free fatty acids and non-oil substances responsible for undesirable flavor and odor. For this operation the plant uses the Votator semi-continuous deodorizer. To get a picture of the processing steps



being programmed here, it is first essential to appreciate the functioning of the deodorizer (diagrammed in Fig. 1).

Deodorizer

The deodorizer consists of a tall cylindrical carbon steel tank, inside of which are supported 5 square super-imposed trays constructed of pure nickel (pro-oxidant effect of nickel is negligible.). Each tray has a quick-opening cast nickel drop valve in its bottom through which the tray contents can be discharged by gravity to the tray below.

Oil to be processed is periodically pumped to a measuring tank, the oil level being regulated by a level controller. At the proper time in the sequence of actions in the cycle, a motor valve opens and allows oil to flow from the measuring tank to the first of the 5 trays in the deodorizer. Here, the oil is deaerated and heated to approximately 370°F with Dowtherm for 1/2 hour. It is then automatically dropped into the second tray where it is heated to operating temperature with Dowtherm vapor for another 1/2 hour.

Oil proceeds to the third and fourth trays in similar manner where it remains for the same period of time, and it is here that deodorizing takes place. Fatty acids, odoriferous materials, and other impurities are removed from the oil by a current of stripping steam injected into the bottom of each tray. Impurities and steam pass out through a vapor vacuum line at the top of the shell to 3-stage steam ejector which maintains an absolute pressure of 5-6 mm Hg.

In the fifth tray, oil is cooled to 130-150°F, after which it passes to the drop tank. There is a semi-continuous progression of oil through the unit, since each time a tray is emptied, it is immediately refilled from above. The drop tank receives a charge of oil every 1/2 hour. Finished deodorized oil is pumped through a pressure filter to storage.

Instrumentation

The "Flex-O-Timer" is solely responsible for automatically coordinating and regulating the sequence of the many operations in this deodorization process. The instrument itself consists of 16 electrical switches actuated by pins on a revolving cycle drum through the action of latch operators. These contacts control the opening and closing of all electrically operated valves. This is accomplished in such a manner that no valve opens while another valve is either open, opening, or closing, in order to avoid costly oil spillage. In addition, each valve remains open for a critical, specified time (with the exception of the measuring tank valve).

Figure 2 is a graphical representation of the "Flex-O-Timer" 30 minute cycle. If studied in conjunction with Figure 1, and keeping in mind the functioning of the Votator semi-continuous deodorizer, it becomes apparent how sequences in the process are timed.

The "Flex-O-Timer" has the advantage of being coordinated with either electrically or pneumatically operated functions, which may be interlocked so that one operation may not proceed unless a given condition is satisfied.

Complete control of all variables in the process is afforded by additional temperature and level controllers (see Fig. 1).

Conclusion

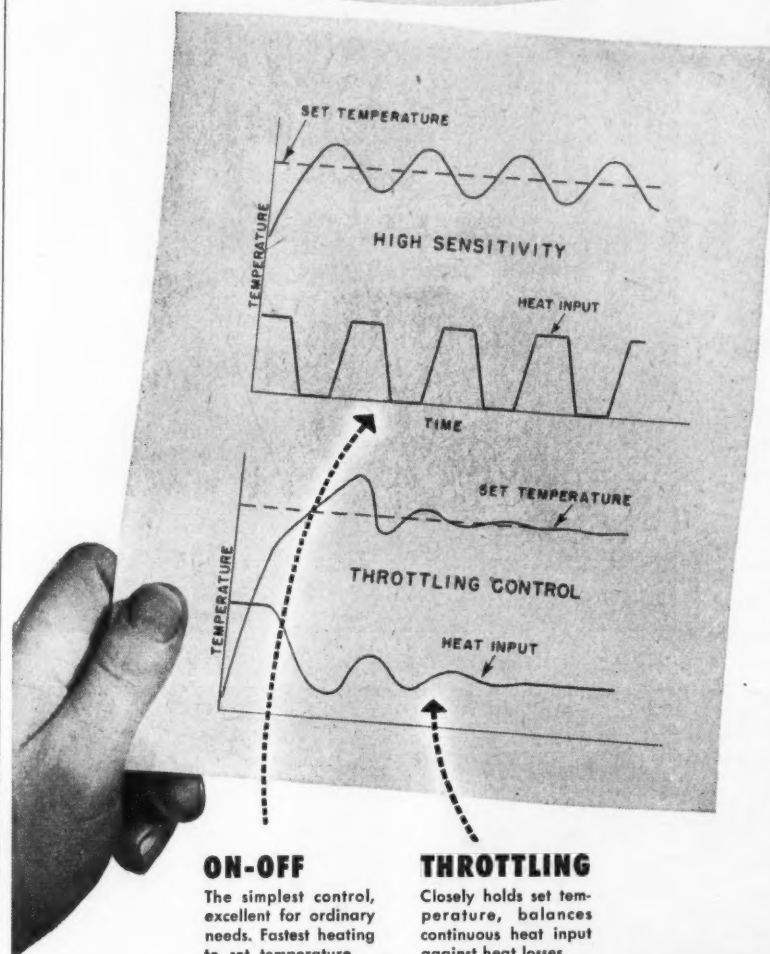
"Flex-O-Timer" affords highly efficient and economical automatic operation of the Votator semi-continuous deodorizer by offering, with minimum of supervision, dependable control of the sequence of processing steps.

Source: The Votator semi-continuous deodorizer for deodorization of edible oils is a development of The Girdler Corporation, Inc., Louisville 1, Ky. "Flex-O-Timer" time cycle controller is a product of the Taylor Instrument Companies, Dept. CP, 95 Ames Street, Rochester 1, N. Y. . . . or for more information check CP 4500 on handy form, pages 2 and 3.

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Choose Characteristics to

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The simplest control, excellent for ordinary needs. Fastest heating to set temperature.

THROTTLING

Closely holds set temperature, balances continuous heat input against heat losses.

Furnaces heated by oil, gas or electricity can be accurately controlled with TAGliabue Pneumatic Controllers. On-off types give fastest heating; throttling types accurately balance heat input against losses to prevent overshooting or hunting. Both utilize an 18 p.s.i. air supply to operate diaphragm valves or power relays. Companion models control pressures along the same principles. Available as Indicating Controllers or as Recorder-Controllers. Write today for technical literature.

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Dielectric Moisture Meter

Checks Various Materials

Moisture content of finely powdered, relatively dry, or coarse and oily materials is determined in less than two minutes with the versatile Model 8007 Dielectric Moisture Meter developed by TAGliabue Instruments Div., Dept. 67, Weston Electrical Instrument Corp., Newark 5, N. J. Operating over an extremely wide range, this meter functions without damaging the sample.



To use, a weighed sample is placed in a cell inserted in the instrument. The meter shows the material's capacitance, which simple tables convert into percent moisture. Chemicals, dehydrated foods, soaps, flours, seeds, plastic molding powders, iron ore, coal, cheese, coffee, corn, grain, dried leaf, flue dust, starch, yeast and cottonseed typify materials tested.

Weston Metal Thermometers

Combine Precision, Stamina

Accurate, reliable temperature indication is given by the all-metal Thermometers manufactured by Weston Electrical Instrument Corp., Newark 5, N. J. These sturdy instruments are designed for utmost legibility and are constructed for use under severe operating conditions.

Weston All-Metal Thermometers can be supplied with the stem projecting from the back or from the bottom, top or side at any angle. Stem lengths from 2 1/2" to 24" are standard; stems as long as 72" are available. A 3" dia. head provides a scale 6" long. Temperatures as low as -100°F. or as high as 1000°F. can be indicated. The "Max-Min" type records highest or lowest temperature since resetting. Contact making type closes an electrical circuit at an easily set value. Special models are also available.

Self-Operating Controllers

Hold Precise Temperatures

Temperatures between the limits of 20 and 300°F. are accurately maintained by the line of Self-Operating Controllers manufactured by TAGliabue Instruments Div., Dept. 67, Weston Electrical Instrument Corp., Newark 5, N. J. These controllers are entirely self-contained, requiring no connection to any air or electrical power supply.

Available in styles for use on steam, hot water or refrigerant lines, TAG Self-Operating Controllers continuously adjust the supply of heating or cooling medium to maintain constant temperature despite changing thermal conditions. Typical applications include water heaters, tanks, retorts, washers, driers and pasteurizers.



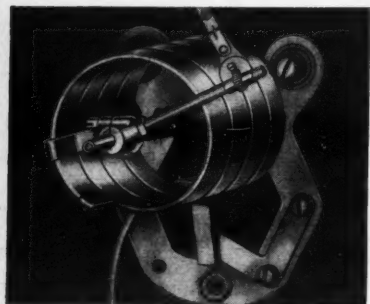
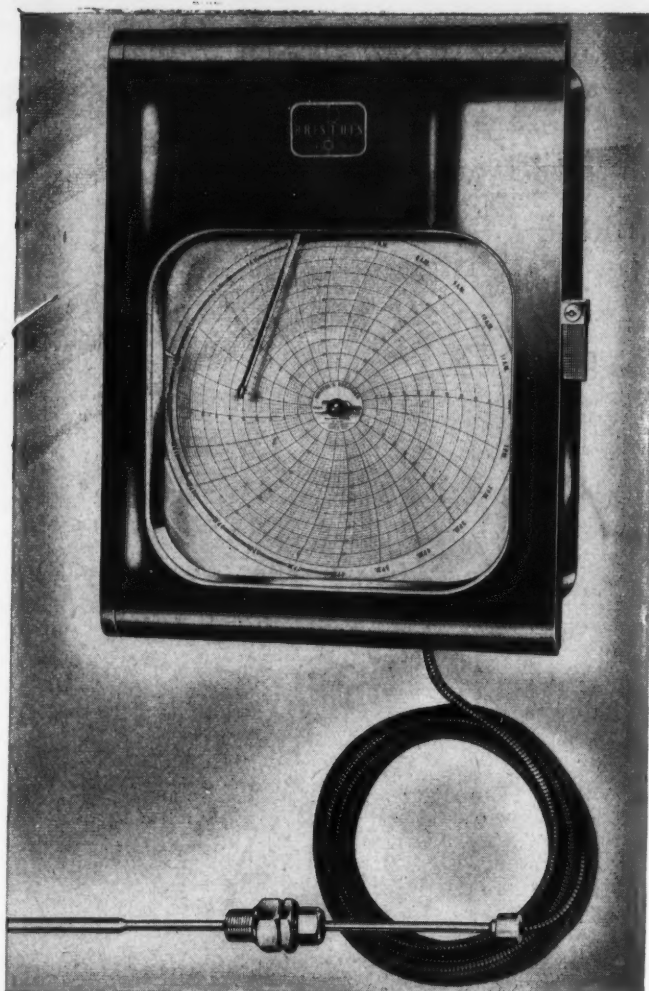
When inquiring check CP 4501 on handy form, pgs. 2-3

NEW SERIES 500 RECORDING THERMOMETER CARRIES ON THE BRISTOL TRADITION

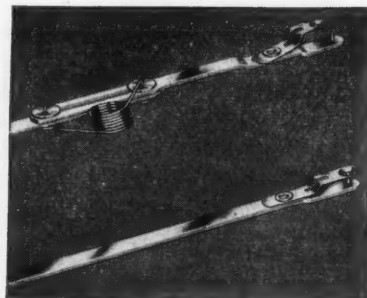
The Bristol Series 500 Recording Thermometer for temperatures between minus 125 F and 1000 F incorporates every modern improvement for dependable accuracy, ease of use and convenient servicing.

In addition, it represents all the wealth of thermometer "know-how" gained by nearly 60 years of experience in building hundreds of thousands of recording thermometers—known all over the world for their high accuracy and dependability.

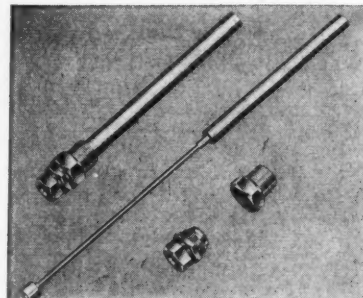
Send for the new Thermometer Catalog T840. Address THE BRISTOL COMPANY, 113 Bristol Road, Waterbury 20, Conn.



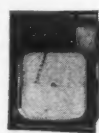
MORE SECURELY SEALED—TROUBLE-FREE
—The measuring system is securely sealed against leakage. Parts are joined with silver solder by induction heating.



STURDY, FRICTION-FREE CONNECTION
between measuring element and pen arm mechanism is provided by strong, adjustable links with polished stainless steel pins.



FLEXIBLE ARMOR is interlock-type, withstands heaviest abuse. *Bulbs*—plain, union or socket type—easily converted.



BRISTOL

AUTOMATIC CONTROLLING, RECORDING AND TELEMETERING INSTRUMENTS

When inquiring check CP 4502 on handy form, pgs. 2-3

PROCESS INSTRUMENTATION

Ambient conditions have no effect on timer's setting . . .

electronic device's relay closes after factory-preset interval from 0.1 to 10.0 seconds

Uses: Initiated by a contact closure, timer throws SPDT relay after a factory-preset time interval ranging from 0.1 to 10.0 seconds has lapsed. Longer time intervals are special.

Features: Electronic device requires no warm-up. Variations in temperature, supply voltage, or line frequency do not affect operation.

Description: Timing is accomplished by charging a condenser through a resistance from a regulated voltage source. A gas filled tube, whose conductance trips the relay, is hooked-in.

Specifications: 105-125 v, 360-1200 cps power supply (60 cps and DC timers also available); relay contacts rated 1 amp non-inductive; and housing is sheet metal can 2-5/16 x 2-1/16 x 3-1/8" high (hermetically sealed).

Source: Development of G. C. Wilson & Company, Dept. CP, Chatham, N. J. . . . or for more information check CP 4503 on handy form, pages 2 and 3.

Only two switches employed when adjusting two-range air velocity meter . . .

portable unit measures speeds from 0 to 4000 fpm; lag is less than 1 second

Uses: Measures air velocities of 0 to 4000 fpm. With special attachment on probe, unit measures static air pressures of 0 to 4" water.

Features: Not affected by length of cable from probe to instrument. Free from errors caused by sudden temperature variations. Lag is less than 1 second.

Description: Portable Air-Meter has two scales for velocity readings: 0 to 750, and 750 to 4000 fpm. When switching from one range to the other, no adjustments or re-zeroings are required. The 11-lb instrument has a self-contained battery power supply and operates from probe-mounted, noble metal thermopile which is placed in stream whose velocity is to be measured.

Operation is very simple. After probe is connected to meter, one switch is used to turn on power and adjust current set needle. Second switch selects range. All adjustment is made by these two switches.

Source: Product of Hastings Instrument Company, Inc., Dept. CP, Super Highway at Pine Ave., Hampton 10, Va. . . . or for more information check CP 4504 on handy form, pages 2 and 3.



Portable air velocity meter

CHEMICAL PROCESSING

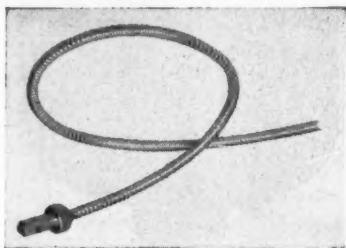
PROCESS INSTRUMENTATION

Flame failure safeguards have new scanner . . .

reduces installation, servicing

Uses: "Sees" all flames (gas, oil, pulverized coal) and gives instantaneous response to flame failure. Monitors the complete firing cycle from pre-ignition purge through post-firing purge to prevent explosions.

Features: Scanner is new — it is drastically compact and installs in a short length of $\frac{1}{2}$ " standard pipe where its sensitive cell can scan the



Scanner of photoelectric flame failure safeguard and programming control

flame area. This simple unit replaces both flame rod and photoelectric scanner, thus reducing installation and servicing problems.

Description: "Firetron Tube" is the new scanner of Fireye Series FP controls. When connected with programming control, it checks the pilot and the establishment of the main flame, and then monitors the complete firing period.

Complete details are carried in maker's Bulletin CP511.

Source: Development of the Combustion Control Corporation, Dept. CP, 77 Broadway, Cambridge 42, Mass. . . . or for more information check CP 4505 on handy form, pages 2 and 3.

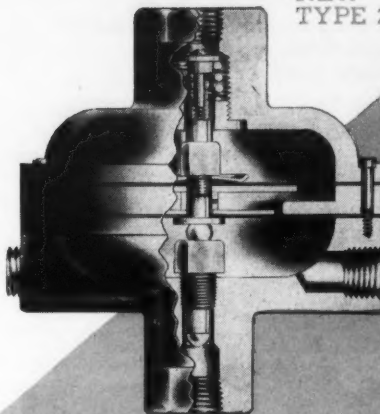
Catalog describes temp regulators

Completely illustrated with photographs and cutaway drawings, 12-page catalog presents mercury-actuated temperature regulators. Accuracy is from ± 0.0005 to $\pm 0.10^\circ\text{F}$; range extremes are -35 to $+350^\circ\text{F}$. Catalog 18 is issued by H-B Instrument Company, Dept. CP, 2633 Trenton Ave., Philadelphia 25, Pa. When inquiring specify CP 4506 on handy form, pages 2 and 3.

For more information on product at right, specify CP 4507 . . . see information request blank between pages 2-3. ➡

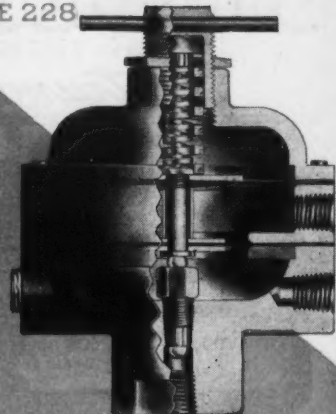
MAY, 1951

NEW
TYPE 227



A delayed action, fixed ratio relay. For use with series-operating diaphragm control valves in "split ranges". Permits full valve travel with primary control pressure changes as low as 2 or 3 pounds.

NEW
TYPE 228



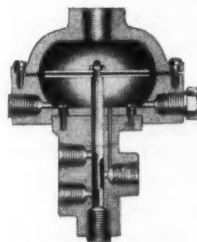
Reverse action relay delivers maximum pressure output at minimum input or vice versa. No modification in either pilot or valve hook-up necessary. Or install in bypass to achieve reversal of valve closure in relation to pilot action if required occasionally.

Get greater speed of action ... Install BS&B "Climax" Relays

• BS&B "Climax" Relays serve as primary regulator valves to step up the action through the control of supply medium to the control valve.

The wide BS&B "Climax" line provides a variety of functions . . . one-to-one, fixed ratio, variable ratio, delayed or reverse action. They may be used to load diaphragms or pistons with liquid operating medium while the control instrument loads the relay with gas. Booster action is also possible, to enable small capacity controls to handle larger duties.

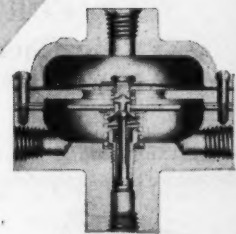
Write today for the latest illustrated catalog Section 109, complete with descriptions, performance figures, installation data.



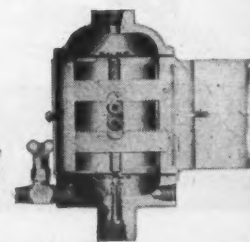
TYPE 209
1 to 1 Ratio

BLACK, SIVALLS & BRYSON, INC.
Climax Controls Division

Adv. Dept. Room 53M 7502 East 12th St. Kansas City 3, Mo.



TYPE 217-4A
Fixed Ratio



TYPE 224
Variable Ratio

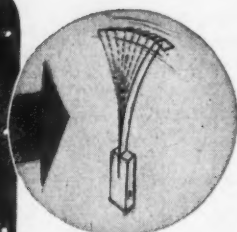
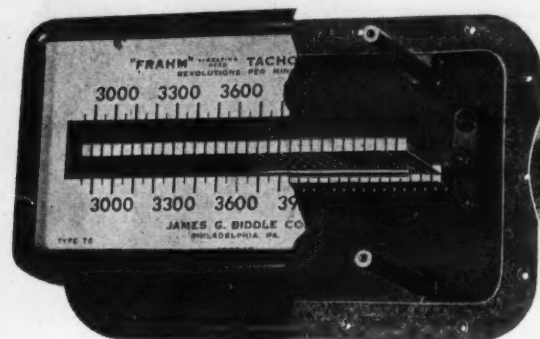
BS&B

"Climax"
RELAY REGULATORS

BIDDLE

NUMBER 3 OF A SERIES

Instrument News



THIS NEW BULLETIN
Tells the Chemical Engineer
HOW TO MEASURE MACHINE SPEED
by Resonance with the
FRAHM® RESONANT REED TACHOMETER

Nearly any rotating machine in chemical processing exerts a certain amount of vibration. Thanks to the phenomenon of resonance, this vibration can be amplified on a set of steel reeds progressively tuned for various frequencies. Speed ranges from 1,000 to 100,000 rpm or vpm may be measured with a Frahm Resonant Reed Tachometer. Simply read the scale at the predominantly vibrating reed or reeds. Accuracy is guaranteed to within .05%. Actually, Biddle craftsmen tune Frahm reeds to within .03% accuracy.

You measure speed simply by touching a Frahm Tachometer to the frame of the machine (or permanently mounting it). This means greater safety in crowded quarters, because you touch no moving parts. A Frahm Tachometer imposes no load on the smallest machine. Ideal for chemical laboratory or down-in-the-plant speed checking. For complete story on sizes, shapes and ranges, let us mail you Bulletin 31-CP.

FOR HIGH VACUUM WORK
in Chemical Laboratory or Process
APIEZON® OILS, WAXES and GREASES

Apiezion products have the recognition of leading scientists who accord them top preference



for high vacuum work. A bulletin just off the press describes the physical characteristics of a variety of special oils, greases and waxes for oil-diffusion pumps, sealing joints, stop cocks, etc. You should have a copy to augment your store of knowledge on the subject. Mailed free; simply ask for Bulletin 43-CP.

JAMES G. BIDDLE CO., 1316 ARCH ST.
PHILADELPHIA 7, PA.

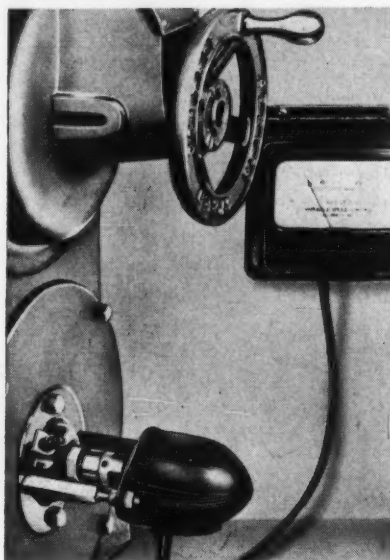
ELECTRICAL TESTING • SPEED MEASURING INSTRUMENTS • LABORATORY & SCIENTIFIC EQUIPMENT

When inquiring check CP 4508 on handy form, pgs. 2-3

PROCESS INSTRUMENTATION

Tachometer mounted on variable speed drive provides remote reading . . .

indicator can be located up to 300' from sensing element without affecting accuracy



Electrical tachometer attached to drive

indicator is calibrated in revolutions per minute, it may be calibrated in minutes baking time, feet per minute, pounds per hour, or any other units desired.

Two or more indicators can be connected to the same sensing device; in that case, factory adjustment is required.

Description: Electric tachometer consists of an AC generator and an indicator head. The latter is essentially an AC voltmeter calibrated in rpm rather than volts.

Tachometer can be quickly and easily installed on Reeves variable speed drives, in capacities from 1/4 to 87 hp, already in service.

Source: Reeves Pulley Company, Dept. CP, Columbus, Ind. . . . or for more information check CP 4509 on handy form, pages 2 and 3.

Reads test instruments and makes a record ready for immediate analysis . . .

electronic device eliminates cumbersome work in recording and computing readings of instruments

Uses: Makes as many as 50,000 readings of test instruments per second and records these readings on either tape or punched cards in a manner such that the data is ready for computation. Unit was originally developed to read and record data on infrared spectrum.

Features: Expected to eliminate cumbersome work involved in recording and computing the readings from strain, pressure, acceleration, and temperature gauges, as well as from pilot plant and other physical and control instruments used in research work. Until now it has been necessary to photograph instrument dials at intervals, and then jot down the readings in numerical order and arrange them for computation.

Description: The "Digital Reader", when linked to

Uses: For measuring rotary speeds of equipment having Reeves variable speed drives. Particularly suitable for applications requiring that the tachometer be mounted in inaccessible or remote locations.

Features: Indicator can be mounted as far as 300' from the speed sensing device without affecting accuracy of the instrument. Although standard



This One Instrument Does the WHOLE JOB of REGULATING FLOW

Here's real simplicity in accurate control of flow volume—a single instrument installed in the pipe line, with no connected air or electric circuits. It naturally costs less to buy, and it requires a great deal less attention and maintenance in operation.

The Kates Direct Acting Regulator handles water, oil, acids, syrups—almost any liquid, in large or small volume, at any practical pressure or temperature. Send for your free copy of Bulletin 554, or tell us your problem and let us recommend a solution.

W. A. KATES CO.
430 Waukegan Road
Deerfield, Illinois

kates
DIRECT ACTING

REGULATOR

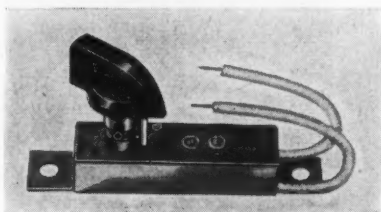
When inquiring check CP 4510 on handy form, pgs. 2-3

CHEMICAL PROCESSING

CONTROL HEATED SURFACES WITH ULANET SHOCKPROOF

Strip Type THERMOSTATS

A rugged design that stands up in rugged service. Self-locking adjustment provides close, positive, quick control.



MODEL HK

★ The live metal parts of this Ulanet unit are shielded by a nickel plated housing and Fiberglas insulated lead wires are provided. Heat resisting alloy metal parts are used in the thermostat construction to insure longer life. The thermal responding element carries no current and is mica insulated from the switch as are all other parts. Heavy duty heat-dissipating electrolytic silver contacts give positive control.

Overall size of the unit is only 2 1/2" L, 3/4"W, 1/2"H. Rating is 1500 watts, 115-230 volts ac. Weight only 2 oz. Maximum operating temperature 550°F.



MODEL HS
Without adj. shaft, knob & limit stop.

Illustrated literature is available on many standard Ulanet Thermostats and Thermal Timers. Please state your requirements.

GEORGE ULANET COMPANY

416 MARKET STREET
NEWARK 5, NEW JERSEY

If your problem is *Heat Control*
your solution is *Ulanet*—
Precision Thermostats & Thermal Timers
Exclusively Since 1931



When inquiring check CP 4511
on handy form, pgs. 2-3

PROCESS INSTRUMENTATION

the instruments to be recorded, converts the electrical signals it receives from the instruments directly into convenient binary-digital form for immediate analysis, computation, smoothing, or storage on recording media. An electronic device, it measures about 20 x 30 x 5", operates from 110-125 volts, and easily incorporates into a variety of multiple-instrument reading and recording systems.

Source: Announced by Arthur D. Little, Inc., Dept. CP, 30 Memorial Dr., Cambridge 42, Mass. . . or for more information check CP 4512 on handy form, pages 2 and 3.

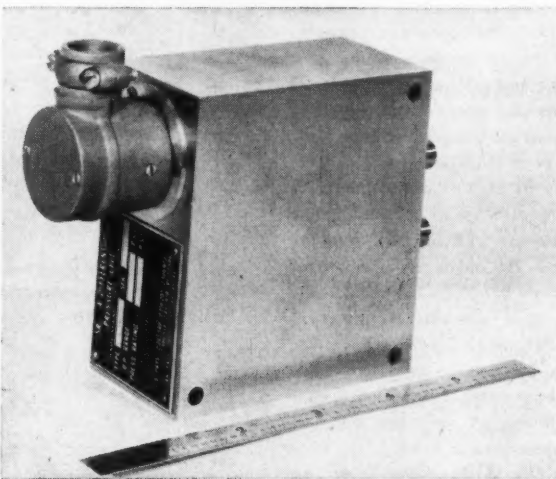
Measure of differential pressure is based on strain gages . . .

cells have an accuracy of 1/4% of full scale anywhere within rated range

Uses: For differential measurements of fluid and gas pressures. May be used for measurement of flow, liquid level, etc. Can be used with indicating, recording and controlling instruments.

Features: Cells are temperature compensated for zero and span. Calibration accuracy is within 1/4% of full scale anywhere within the rated range.

Description: Type FMB differential pressure cells consist of a pair of matched Monel metal pressure



Differential pressure cell, showing electrical connections at left. Pressure connections are on opposite side

bellows arranged to apply opposing forces on a cantilever beam to which SR-4 strain gages are bonded. Sensing element is hermetically sealed by solder in an aluminum box. Electrical connections are made through glass-to-metal seals. Cell is insensitive to linear acceleration in any direction and may be mounted in any position without affecting pressure indications.

Two pressure ranges are available: ± 10 and ± 20 psi. Maximum permissible line pressures are 50 and 100 psi respectively. Cells are designed for standard 120- and 300-ohm circuits. Recommended input voltages are 6 and 12 volts respectively, with maximums of 8 and 16 volts respectively. Output at rated differential pressures is 2.000 ± 0.005 millivolts per volt input.

Source: Development of Baldwin-Lima-Hamilton Corp., Dept. CP, Philadelphia 42, Pa. . . or for more information check CP 4513 on handy form, pages 2 and 3.

A SHORT STATEMENT ON STEAM TRAPS

THAT IS LONG ON GOOD SENSE!

A Steam Trap has but *one* function—to drain condensate from steam lines. Right?

Now if one brand of Steam Trap can drain *twice* as much condensate $\$ \$ = \$$ under equal conditions, as another of the same size and price—it's just plain common sense to buy that brand, isn't it?

Clark DUO-STEP LEVERAGE STEAM TRAPS have proved in tests time and time again that they can drain *twice* the condensate of ordinary traps. So—do as thousands of smart steam engineers have done:



SWITCH TO CLARK DUO-STEP
STEAM TRAPS FOR DOUBLE
DRAINAGE EFFICIENCY!

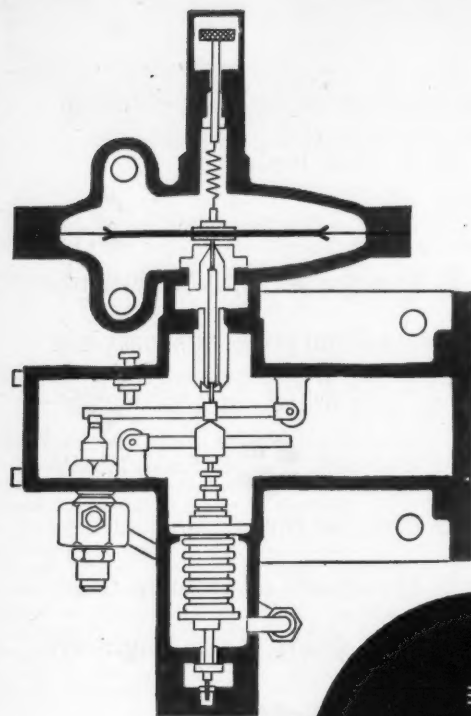
THE CLARK MANUFACTURING COMPANY
1848 East 38th St. • Cleveland 14, Ohio



When inquiring check CP 4514 on handy form, pgs. 2-3

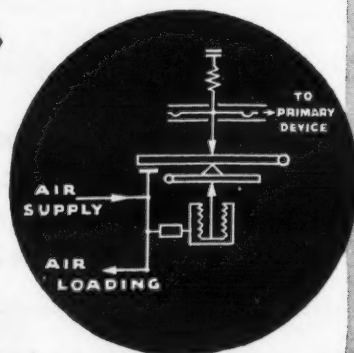
how to solve a sensitive measurement problem

...like transforming 0-5" w.c. to 3-15 p.s.i.



SCHEMATIC DIAGRAM . . .

The signal from the primary device is transmitted to the Askania diaphragm. It is then transmitted to a modulating valve which proportions the loading signal over the standard range of 3 p.s.i. to 15 p.s.i.



ASKANIA Controls

answer:

ASKANIA Pneumatic PRESSURE TRANSMITTER

The Askania Transmitter is a small, compact unit that provides a simple, accurate way to transform minute pressures into measurable air load pressures. The differential pressure is measured by the Askania diaphragm.

Features of the Askania unit include: accuracy of plus or minus .5% over ranges from 0-5" w.c.; air consumption of approximately .8 cu. ft. per minute of free air; the air nozzle and flapper arrangement permit the use of relatively dirty air, since there are no small clearances to become clogged or inoperative; a ratio slider may be used to provide an adjustable ratio between the small input differential and the outgoing loading pressure.

If you have a sensitive measurement problem you will want further details on this Askania Pneumatic Pressure Transmitter. Send for complete information.

ASKANIA REGULATOR COMPANY

A SUBSIDIARY OF GENERAL PRECISION EQUIPMENT CORPORATION
242 EAST ONTARIO STREET • CHICAGO 11, ILL.

When inquiring check CP 4515 on handy form, pgs. 2-3

PROCESS INSTRUMENTATION

Brings about control action after selected batch count has been reached . . .

then immediately adjusts to zero to start counting next batch quantity

Uses: For counting any object or motion that can be arranged to actuate a switch, relay, photoelectric unit, or other circuit breaking device. May be used to start or stop electrically operated machinery, conveyors, signals, chute gates, pile changers, kickout devices, or other arrangements for marking or separating batches, warning operators, etc., after a preselected batch count has been reached.



Batch counter

Features: After each batch count has been reached and control action has taken place, counter immediately adjusts to zero to start counting next batch quantity.

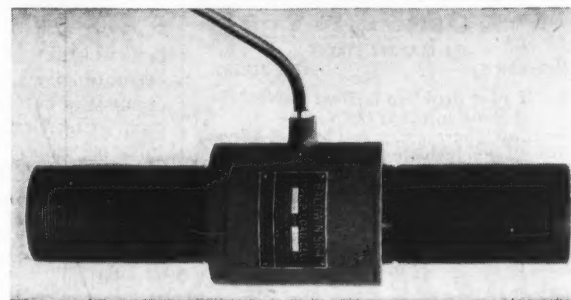
Description: "Monitor Automatic Batch Counters" are furnished in four models with counting ranges of 1-99, 1-999, 1-9999, and 1-99999. Any desired batch quantity (limit) within the range is easily selected by turning dial pointers. Switch that closes at the end of the batch count serves to bring about ultimate control action. Standard operation is from 115 v, 25-60 cps AC lines.

Source: Product of the Production Instrument Co., Dept. CP, 704-30 W. Jackson Blvd., Chicago 6, Ill. . . or for more information check CP 4516 on handy form, pages 2 and 3.

Strain gage basis for measurement of tension . . .

load cells measure to an accuracy of plus or minus 1/4% of rated capacity

Uses: For measuring forces and weights in tension. Capacities are 10-, 20-, 50-, and 100-thousand pounds. Applications include suspension of tanks and platforms, measurement of thrust carried in tension, engine dy-



Tensional load cell

namometers, portable weighing hoppers, and cable tension testing.

Features: Load cells have an accuracy of measurement within plus or minus 1/4% of rated capacity and are temperature compensated. Standard cells loaded to capacity for several weeks at room temperature have

CHEMICAL PROCESSING

varied a maximum of merely 0.1% of the initial load without change in measuring performance. Imperviousness to moisture and dirt is afforded by O-ring seals; external circuits may be protected by sealed circuits.

Description: Load measurement is based on the use of special SR-4 resistance wire strain gages bonded to a load-carrying shaft. Gages respond to infinitesimal stretch of the shaft under tensional load by a change in electrical resistance that varies the voltage. This change in voltage is measurable on a direct-reading dial indicator or on either resistance-potentiometer or microammeter type recorders. Cell may be used to actuate relays for automatic control mechanisms. Electrical instrumentation can be located at or remote from the cell.

A single indicator may be used to obtain separate measurements from a number of load cells, or a load may be distributed among several cells whose combined output may be automatically totaled.

Source: Type "P" load cells are developments of Baldwin-Lima-Hamilton Corp., Dept. CP, Philadelphia 42, Pa. . . or for more information check CP 4517 on handy form, pages 2 and 3.

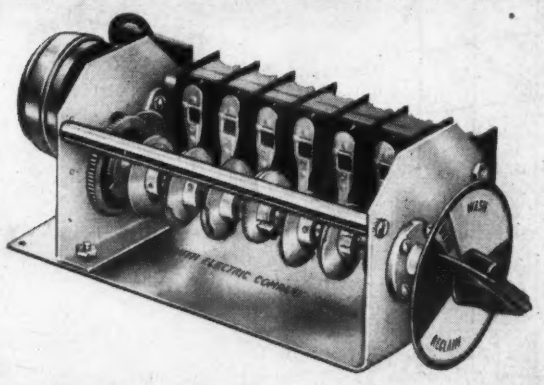
Times the 'on-off' periods of any number of electrical functions in a process

will operate in repeating sequence or continuous cycle, as desired

Uses: Controls the sequence of steps in a processing operation by timing the 'on and off' periods of component electrical apparatus. Will operate in repeating sequence or continuous cycle, as one cycle when actuated by push-button, or as an interval timer for manual start and automatic stop.

Features: Timer can be set for 'on and off' periods of as many electrical circuits as desired.

Description: "Multiple Circuit Timer" has a bank of SPDT micro switches operated by adjustable cams driven



Timer fitted for 'on-off' control of 7 circuits

by a synchronous motor. This construction allows adding any number of switches to accommodate required circuits. Can be furnished without motor for specialized applications.

Source: Announced by the Zenith Electric Company, Dept. CP, 152 West Walton St., Chicago 10, Ill. . . or for more information check CP 4518 on handy form, pages 2 and 3.

Important FACTS ABOUT pH for PROFIT-MINDED EXECUTIVES



WHETHER you are an executive responsible for planning long-range plant production, or for obtaining maximum efficiency from present processing operations, one of the most important advancements you can make is the installation of BECKMAN pH CONTROL. Through the proper application of modern pH control you can make many vital savings . . . savings that will quickly pay for the installation and will continue paying big dividends throughout the years. For example, some of the many benefits resulting from Beckman pH Control include . . .

- . . . saving valuable chemicals through more accurate control of dosages.
- . . . reducing costly corrosion by pre-regulating acid and alkaline solutions.
- . . . speeding up process operations by operating at optimum pH values.
- . . . minimizing rejects by increasing the uniformity of process solutions.
- . . . and many other important savings in time, materials and plant operating costs.

BUT TO MAKE CERTAIN you get the latest, most convenient and most accurate pH equipment available, be sure to specify "BECKMAN" . . .

* Beckman pH equipment is completely electrometric, eliminating the mess and inaccuracies of colorimetric methods. Simply press a button and the exact pH of any process is instantly shown on a large easily-read dial. *It is the simplest of all pH methods!*

* With Beckman equipment no time-wasting or troublesome sampling devices are needed. Beckman pH electrodes may be installed directly in vats, tanks, channels or flow lines—and exact pH values read instantly—and continuously, if desired—on the process fluids themselves.

The above are only a few of many Beckman advantages. Beckman pioneered the modern glass electrode pH instrument . . . pioneered the first completely automatic pH indicator, recorder and controller . . . pioneered High Temperature Glass Electrodes which can be used continuously at temperatures as high as 212° F. (100° C.) . . . pioneered High pH Electrodes which permit accurate measurements of high pH values even in the presence of sodium ions . . . and pioneered many other vital advancements. In fact, Beckman is the only pH equipment embodying every modern advancement in the field of pH!

* The accuracy of Beckman pH readings is completely unaffected by human errors in color judgment, by turbidity, oxidizing or reducing agents, by suspended materials, colored process solutions or other variables that affect outmoded colorimetric methods. *Beckman pH readings are universally accurate and dependable!*

* Unique rugged-type Beckman Electrodes, specially designed for direct immersion in abrasive or suspension-laden fluids, reduce maintenance to an absolute minimum. *Beckman is the most trouble-free of all pH equipment!*

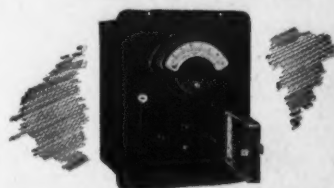
BRING YOUR pH PROBLEM TO US. Our trained engineers will gladly study your problem and recommend the equipment best suited to your particular requirements. No obligation, of course.

BECKMAN

BECKMAN INSTRUMENTS
National Technical Laboratories • South Pasadena 11, California
INSTRUMENTS CONTROL MODERN INDUSTRIES

When inquiring check CP 4519 on handy form, pgs. 2-3

THERE'S A BECKMAN pH INSTRUMENT FOR EVERY NEED



COMPLETELY AUTOMATIC! The Beckman Model R instrument operates directly from standard 110 v. A.C. lines to provide completely automatic pH indication. Also provides for completely automatic pH recording and automatic process control. Can be installed to give accurate pH readings from various stations in plant through one instrument. *This is the pH unit being installed by today's most modern plants, large and small.*



PORTABLE A.C. OPERATION! The Beckman Model H instrument can be quickly moved from one part of the plant to another and plugs directly into standard 110 v. 50/60 cycle A.C. current. Compact, convenient and extremely simple to operate, the Model H gives instant pH readings on an easily-read dial. It is widely used both for manual pH control of small plants and as an auxiliary instrument on completely automatic pH installations.

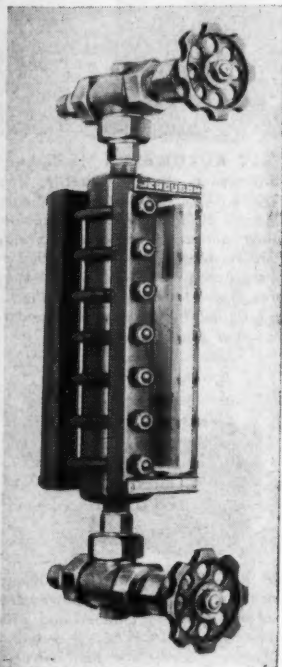


COMPLETELY SELF-CONTAINED! The Beckman Model M is the ideal pH instrument where complete portability is desired. Operating from its own self-contained, long-life power supply, the Model M can be used anywhere in the plant or field, whether convenient to power lines or not. Features the same accuracy, simplicity and operating speed as the Model H, and is also widely used both for manual pH control of small plants and as auxiliary equipment on large automatic installations.

Write for literature on Beckman pH Equipment!

**No frosting of vision slot
when gauging level of
low-temp liquids . . .**

readings further simplified by eliminating turbulence at the meniscus



Greater meniscus area reduces turbulence in reading liquid level

0.5" of conventional gauges. In installation, the entire gauge can be covered with insulation, leaving only the outer surfaces of the non-frosting window exposed.

Source: Jerguson Gage & Valve Co., Dept. CP, 80 Fellsway, Somerville 45, Mass., is the maker . . . or for more information check CP 4520 on handy form, pages 2 and 3.

**One version of moisture meter
allows calibration of scale
for any desired material . . .**

other is normally calibrated in percent moisture

Uses: Meter for measuring the moisture content of wood, plaster, and other materials of varying textures and consistencies. Available in two forms: one with scale calibrated for use with wood and plaster, other with linear graduations for use with materials for which no calibrations exist.

Features: Complete portability, overall applicable resistance range of 2000 to 20,000 meg-ohms, and easily read scales are outstanding highlights.

Description: "Moisturonic" moisture meter operates on the resistance principle. Calibrated instrument, known as the Wood Meter, has one scale that gives direct readings from 7 to 30% moisture, and a second scale for comparative readings from 30 to 150% moisture.

All-purpose instrument with linear scale is used to establish special calibrative data, and to test any

Uses: For gauging the level of low temperature and low boiling liquids. Applicable to service on ammonia, freon, propane, ethylene, and other lines.

Features: Frost is prevented from forming over the vision slot by a special extension of gauge glass. Gauging is further simplified by increased meniscus area, reducing tendency of liquid to boil or surge at the meniscus.

Description: "Non-Frosting Large Chamber Gages", series RLF-10 (reflex) or series TLF (transparent), have a transparent unit extending from the gauge glass and projecting beyond the cover bolts so that frost cannot build up over the vision slot of the cover forging. The meniscus is approximately 3" as compared with

PROBLEM...

To help papermakers formulate high-solids pigment casein coatings to be applied by high-speed roll coaters, without causing surface patterning, unevenness, and other imperfections.



SOLUTION...

The Hercules High-Shear Viscometer —which accurately measures and charts the complex flow characteristics and behavior of high-solids pigment suspensions to an extent previously unobtainable, thereby helping papermakers to design coatings for performance on high-speed coating processes.

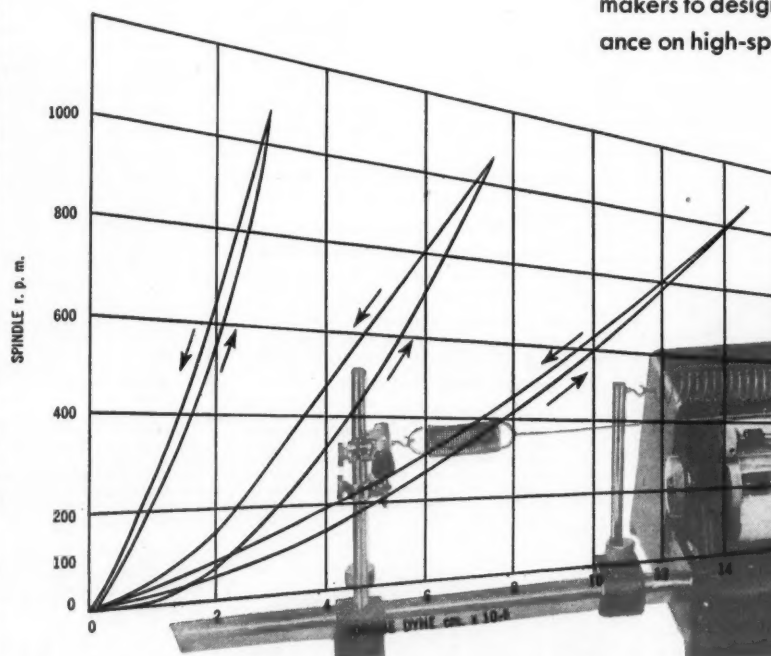


Illustration shows the Hercules High-Shear Viscometer and rheograms taken with it of typical operable machine coating colors.

SYNTHETIC RESINS • CELLULOSE PRODUCTS • TERPENE CHEMICALS • ROSIN AND ROSIN DERIVATIVES

The Hercules High-Shear Viscometer

Developed by Hercules, in its own laboratories for research on high-speed casein coatings, the High-Shear Viscometer is now used by many paper mills. Other industries also are finding this instrument to be a valuable addition to their research equipment. These process industries are using the High-Shear Viscometer to better predetermine the performance of such products as adhesives, paints, ceramic compounds, and printing inks where these are subjected to high rates of shear or agitation in manufacture or use.

This development is typical of varied approaches used by Hercules in application research for its chemicals . . . with a view to improving their working characteristics and broadening their field of application.

HERCULES POWDER COMPANY 940 Market Street, Wilmington, Del.
Sales Offices in Principal Cities

RESULT...

High-quality casein bonded coated paper for offset printing can now be produced faster and cheaper. In addition, the advantages of brightness, bonding strength, waterproofness, and printability characteristics of casein are now permitted in high solids machine coatings.



CHLORINATED PRODUCTS • OTHER CHEMICAL MATERIALS FOR INDUSTRY

HERCULES

GC51-2

When inquiring check CP 4521 on handy form, pgs. 2-3



New Experiment Station Wing

A new 3-story wing addition to its main laboratory building near Wilmington is the latest expansion by Hercules in its research facilities over the past five years. The new wing provides 26 new laboratory units accommodating 51 chemists, and increases working space in the main laboratory building by 60%.

These increased facilities include two new air-conditioned laboratories for testing paper and textiles. Two new laboratories have been provided to house microanalytical research equipment. Two laboratories are earmarked for physicists for spectrometry, and to house a newly acquired mass spectrometer. A specially designed laboratory has been set up for work on hot lacquer.

Try This for Size

A new and simplified automatic emulsifier for rosin size has just been introduced to the paper trade by Hercules. Lower in price than the original emulsifier introduced by Hercules in 1948, the new unit meets the need for a still more economical and simplified process.

The new unit, like the original unit, offers paper mills savings in labor costs and space requirements. It provides rosin emulsions of greater uniformity of concentration and quality.

Paper mills may obtain specific details on cost, layout, construction, and other pertinent information by writing to Hercules.

Conserve Scarce Phenolics

Technical data indicating the opportunities that low-cost "Vinsol"® resin offers in conserving phenolics are included in a new booklet "Hercules Vinsol Resin, A Modifier of Thermosetting Phenolic Resins." Today, especially, it will pay you to evaluate "Vinsol", as a phenolic extender or modifier. Priced at less than 5¢ per pound, this dark-colored, high-melting thermoplastic offers substantial savings in total resin costs.

At present, many Hercules chemical materials are not available. This advertisement is intended to keep you informed of latest developments, and to suggest possible future applications in your business.

PROCESS INSTRUMENTATION



Battery-powered "Moisturonic" Wood Meter

materials into which electrodes can be inserted. Linear scale has uniform graduations from 0 to 100, and another with graduations from 100 to 200. Users can check the scales against their own standards.

Source: Tagliabue Instruments Division of the Weston Electrical Instrument Corporation, Dept. CP, 614 Frelinghuysen Ave., Newark 5, N. J., is the maker . . . or for more information check CP 4522 on handy form, pages 2 and 3.

Actuates 5 load contacts after any set time interval from 1/2 sec-24 hr lapses . . .

pre-set time interval and elapsed time are always clearly visible on large readable dial

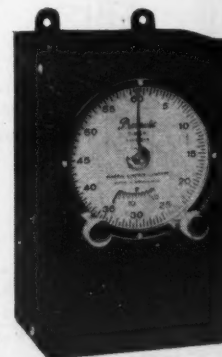
Uses: Times the 'on-off' period of electrical functions. Applicable to all time periods between one-half second and twenty-four hours.

Features: Both the pre-set time interval and the elapsed time are clearly visible on timer's 3-3/8" diameter dial.

Description: Type SY "Promatic" synchronous motor timer actuates five SPDT load contacts independent of the timer-control circuits. Two separate solenoids are used — one operates the clutch and timing mechanism, and the other the load contacts. Timer automatically resets at the end of each complete cycle.

Drive does not make use of gears; mounting is in a sturdy cast iron frame. Timer is available for either 115 or 230 volt AC operation. Outside dimensions are 4 1/2" wide x 4 1/8" deep x 8" high.

Source: Product Acceptance Company, Dept. CP, 357 Everett St., Boston 34, Mass., is the maker . . . or more information check CP 4523 on handy form, pages 2 and 3.

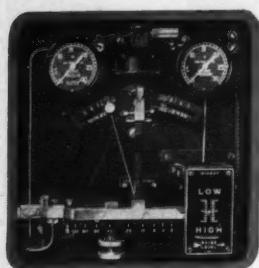


Synchronous motor timer

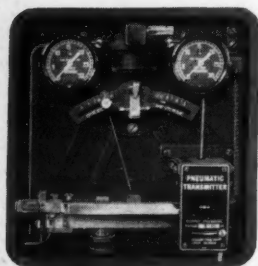
ONLY MASONNEILAN

12,000 Series Liquid Level Controllers

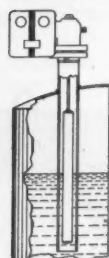
*Give You All These
Advantages*



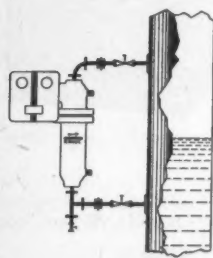
Model 12600
Proportional Control



Model 12620
Pneumatic Transmitter



Top Vessel Mounting



Top and Bottom
Screwed Connections

Nowhere except in the Masoneilan 12,000 Series Variable Displacement Level Controllers will you find such a wide choice of essential characteristics.

Wide Variety of Controller Types

Proportional controller, proportional plus reset controller, pneumatic transmitter, two-position differential gap controller, three-position pneumatic signal switch; duplex types — proportional controller and pneumatic transmitter, proportional-reset controller and pneumatic transmitter, proportional controller and pneumatic signal switch (and other combinations as required).

Selection of Mountings

Two internal mountings — top or side vessel flanged connection; eight external mountings — displacer chamber with screwed or flanged connections arranged for best adaptability to a variety of vessels. Right or left hand instrument case mounting.

Selection of Torque Tube Materials

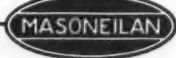
Selection of torque tube assembly material best suited for the application. Standard is Inconel. Monel, Type 316 Stainless Steel, or Phosphor Bronze also available. (Materials offered subject to availability during shortages.)

Available in Many Ranges

12,000 Series Level Controllers are available in many standard ranges — 14 and 32 in.; 4, 5, 6, 7, 8, 10 and 15 ft. Other ranges can be supplied for special applications.

Meet Great Variety of Applications

Typical applications include level in fractionating or crude towers, accumulators, separators, sumps, chillers, feed water heaters, settling tanks — many other applications.



MASON-NEILAN REGULATOR CO.
1203 ADAMS STREET, BOSTON 24, MASS.

Sales Offices or Distributors in the Following Cities:
New York • Syracuse • Chicago • St. Louis • Tulsa • Philadelphia
Houston • Pittsburgh • Atlanta • Cleveland • Cincinnati • Detroit
San Francisco • Salt Lake City • El Paso • Boise • Albuquerque
Charlotte, N. C. • Los Angeles • Denver • Appleton, Wisconsin
Masoneilan Regulator Co., Ltd., Montreal and Toronto

When inquiring check CP 4524 on handy form, pgs. 2-3

PROCESS INSTRUMENTATION

Smooths-out temp variations in controlled heating equipment . . .

adds the equivalent of proportioning control to any type of heating equipment with "on-off" control

Uses: Supplementary control device "anticipates" the fuel needs of controlled heating equipment, and automatically minimizes the "on" and "off" variation of a control instrument above and below the preset control point to bring about closer control of the process variable.

May be used to add the equivalent of proportioning control to any type of heating equipment that has "on-off" control — ovens, furnaces, kilns, vats, molding and extrusion machines, etc.

Features: Affords savings in fuel, and prevents over or under shooting of temperatures.

Description: Capaciline "straight line" control is operated through a very simple electrical circuit — no tubes, cams, or motors are employed. Unit is available as a small self-contained instrument or as a built-in feature of maker's electronic controllers and strip chart recorders.

Bulletin CL-1 contains additional information.

Source: Product of Wheelco Instruments Company, Dept. CP, 847 W. Harrison St., Chicago 7, Ill. . . or for more information check CP 4525 on handy form, pages 2 and 3.

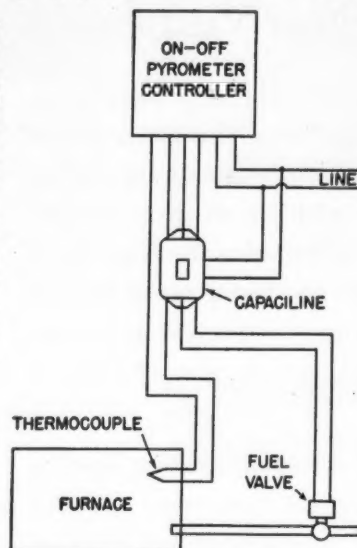
Overloads and off-center loads don't affect improved load cell as much as original . . .

seven models for tension, compression to 50,000 lb will replace older type

Uses: With suitable indicating, recording or controlling instruments, load cells are used for measuring tension and compression loads up to 50,000 lb (7 models). Will replace the heretofore standard Type U cell made by this manufacturer.

Features: Redesigned for larger-scale production, more ample safety factor with overloads, and higher accuracy with off-center loads.

Description: The new load cells, Series U-1, have the same rugged construction as the Type U cells. They hold sealed-in sensing elements consisting of SR-4 resistance wire strain gages bonded to a steel column or bar and compensated for temperature variations. Female



Typical straight line temperature control application using a conventional "on-off" pyrometer controller in combination with Capaciline supplementary control

**REDUCE
THREADED
CONNECTIONS**
From 10 to 3



With NEW

JERGUSON VALVES

For Instrument Piping
and General Use

YOU can make tremendous time and cost savings with this complete new line of Jerguson Valves for Instrument Piping and General Use.

Threaded connections are reduced from 10 to 3, for these valves combine unions, nipples, reducers, elbows, tees, valve, and drain valve in one space saving unit. One valve replaces the multiple set-up of valves and connections formerly used.

Nine different styles . . . with or without union outlet, as well as off-set and jacketed valves.

Features available include safety shut-off; double-seating stem for re-packing under pressure; regular or quick-closing stem and lever; re-grindable and renewable seats; pressure bleeder valve and test gage connection; outside screw and yoke when desired; throttling stem when desired.




Write for full details
today. Ask for Data
Unit on General Use
Valves.

JERGUSON

Gages and Valves for the
Observation of Liquids and Levels
JERGUSON GAGE & VALVE COMPANY
100 Fellsway, Somerville 45, Mass.
Representatives in Major Cities
Phone Listed Under JERGUSON
Jerguson Tress Gage & Valve Co. Ltd., London, Eng.

When inquiring check CP 4526
on handy form, pgs. 2-3

CHEMICAL PROCESSING



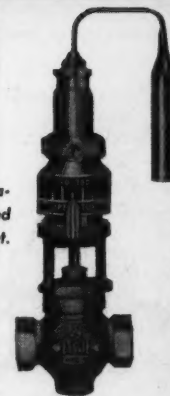
MAY, 1951

992

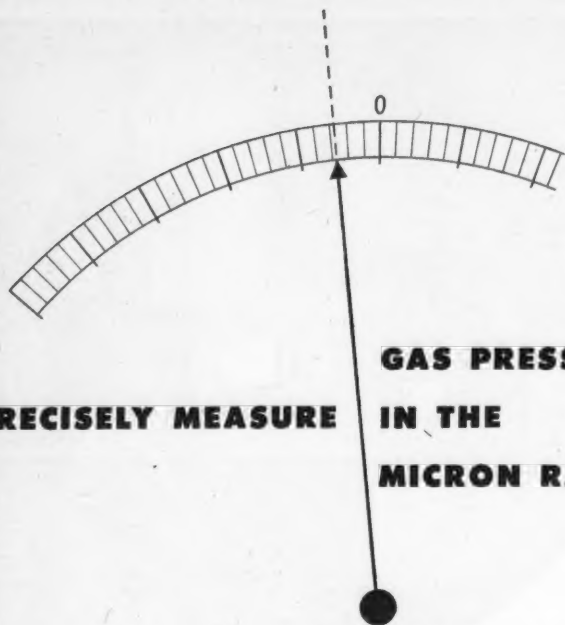
When inquiring check CP 4529 on handy form, pgs. 2-3



LESLIE Class MCC-1 Temperature Regulator with Calibrated Dial and Liquid Filled Element.



PRECISELY MEASURE GAS PRESSURES IN THE MICRON RANGE

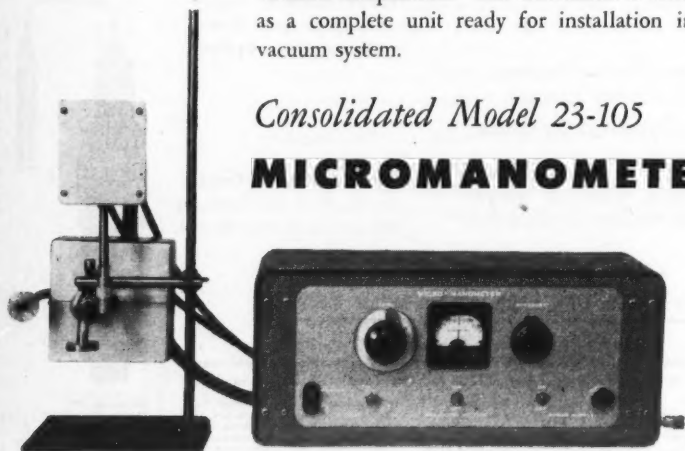


Even without knowing the composition of a gas you can accurately measure its pressure in the 0-150 micron range by using the Consolidated Model 23-105 Micromanometer. Pressure changes of a fraction of a micron can now be determined.

Using the Consolidated Micromanometer, gas composition becomes unimportant. Pressure readings are entirely independent of the fact that gas might be air, a condensable vapor, or an unknown mixture. Because of this, special calibration charts for each gas are eliminated.

Model 23-105 is ideal for measuring static pressures in high vacuum stills and crystallizers; or for measuring the pressure of gases of unknown or variable composition. The instrument is furnished as a complete unit ready for installation in any vacuum system.

Consolidated Model 23-105 MICROMANOMETER



CONSOLIDATED ENGINEERING Corporation

Analytical Instruments for Science and Industry
300 No. Sierra Madre Villa Pasadena 8, California



When inquiring check CP 4530 on handy form, pgs. 2-3

PROCESS INSTRUMENTATION

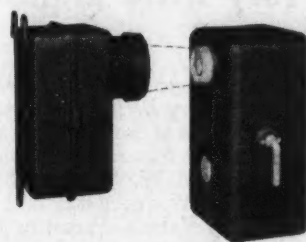
Sounds alarm should an intruder break invisible beam . . .

offers protection up to a maximum of fifty feet distance

Uses: Provides positive intrusion and burglary protection for offices, industrial properties, etc.

Features: Photoelectric device forms a protecting wall of invisible light across any space up to 50' — no intruder can enter this space without setting-off alarm signals.

Description: Photoelectric Intrusion Alarm Set P1A consists of a control (maker's type A2OC-2) and



Photoelectric intrusion alarm

an infrared light source (maker's type L60B). Beam from the light source is aligned with the "eye" of the control. Even momentary interruption of this beam actuates a control relay, ultimately operating an alarm device.

Alarm can be silenced only by restoring the electrical circuit to original conditions by a manual or automatic reset switch. A tamper-proof sensitivity adjustment on control allows operation over varying distances between light source and control.

Specifications: 115 v, 50/60 cps supply. . . SPDT (isolated contacts) relay. . . and 10 amp, 115 v AC contact rating.

Source: Development of Photo-switch Incorporated, Dept. CP, 77 Broadway, Cambridge 42, Mass. . . or for more information check CP 4531 on handy form, pages 2 and 3.

12 values per decade from resistor

One-page data sheet gives specifications for decade resistor. Range is from 10 ohms to 8.2 megohms, with 12 values per decade. "Decade Resistor, Model 2" is issued by Rochester Electronics Co., Inc., Dept. CP, Box 227, Penfield, N. Y. When inquiring specify CP 4532 on handy form, pages 2 and 3.

CAMBRIDGE VOLTAMOSCOPE (an indicating instrument) AND VOLTAMOGRAPH (a recording instrument) FOR POLAROGRAPHIC ANALYSIS



The VOLTAMOSCOPE is a non-recording instrument on which the voltage and current are read and manually plotted. Many chemical determinations are simply made by reading the currents of two known voltages and finding the difference.

The VOLTAMOGRAPH consists of a robust pen-writing galvanometer with amplifier and a potentiometer with chart driving mechanism. Suitable for industrial and research purposes. The voltage-current graph is automatically drawn. Operates directly from A. C. line.

Identical electrodes are used for both indicating and recording models. Write for bulletin B 255.

CAMBRIDGE INSTRUMENT CO., INC.

3706 Grand Central Terminal, New York 17, N. Y.

PIONEER MANUFACTURERS OF PRECISION INSTRUMENTS

When inquiring check CP 4533 on handy form, pgs. 2-3

For quick, accurate CHECK ON PROCESS GASES

USE RANAREX

Whenever the specific gravity of a gas is a guide to a chemical reaction or process, Ranarex can be used to indicate, record or control it. Find out now how this accurate, low-cost instrument can help you!

Write to The Permutit Company, Dept. CP-5, 330 West 42nd St., New York 18, N. Y.



RANAREX PRODUCT OF THE PERMUTIT CO.

When inquiring check CP 4534 on handy form, pgs. 2-3

CHEMICAL PROCESSING

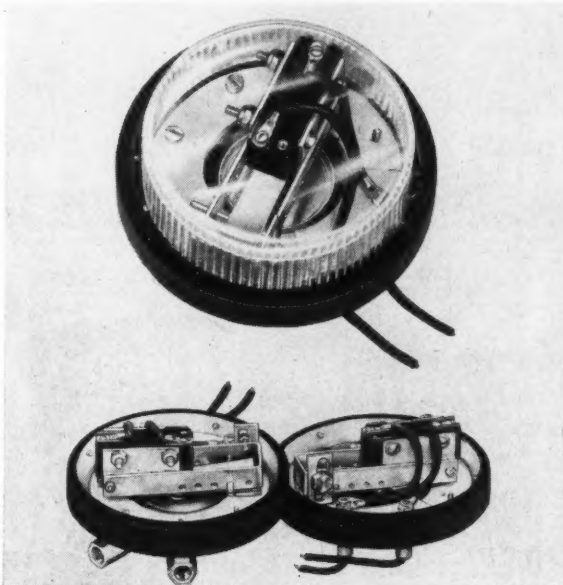
Makes or breaks circuits with as little pressure change as 0.25" water gauge . . .

settings can be set in field or factory-set; are maintained within $\pm 3\%$ after thousands of cycles

Uses: Pressure-actuated switches can be used for indicating pressure drops in air filters and across coils, to indicate power or blower failure, actuating motors on automatic air equipment, to warn against unsafe or uneconomical operating conditions in forced air feed and boiler draft, and used with pitot static head to indicate air velocities either above or below safe values established.

Rated at 10 amperes, 110 volts AC. Capable of operation on plus, minus, or differential pressures up to 4" water.

Features: Settings (adjustable in field or factory-set) are accurately maintained within plus or minus 3%,



Switch is actuated by plus, minus, or differential pressures of low amounts

even after thousands of cycles. Switches can be mounted in any position, and are available in connection styles suitable for front, flush, or semi-flush panel mounting, as desired.

Description: Two models: No. 1620 (illustrated) is $4\frac{1}{2}$ " diameter with a minimum setting of 0.25" water, with a gap between make-and-break pressure of 0.20" water or greater.

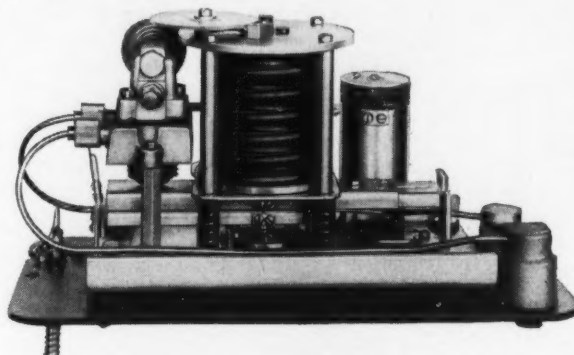
No. 1625 is 7" diameter with a minimum gap between make-and-break pressure of 0.05" water in the lower settings, and 10% or more of the setting in higher ranges.

Switches have a slack diaphragm linked to a beryllium-copper spring, in turn linked with a sensitive micro-switch. Pressure changes are reflected in the spring, either opening or closing the micro-switch.

Source: Development of the F. W. Dwyer Manufacturing Co., Dept. CP, 317 S. Western Ave., Chicago 12, Ill. . . . or for more information check CP 4535 on handy form, pages 2 and 3.

DYNAMIC ACCURACY means more today than ever before!

Accurate Measurement of changing temperatures and pressures is the vital first step in instrumentation, whether indicating, recording or controlling. Today, TRANSAIRE* Transmitters set new standards for sensitive and accurate measurement.



TEMPERATURE:

Taylor TRANSAIRE Temperature Transmitter with Speed-Act* lets you measure and transmit smallest temperature changes up to 1000 feet with great accuracy! The *only* temperature transmitter that gives you:

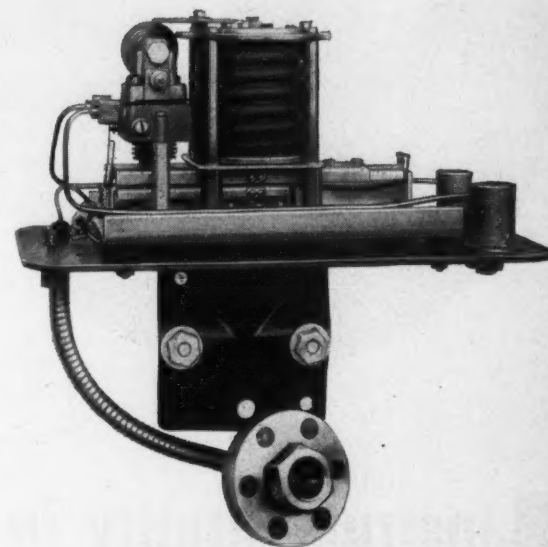
1. DYNAMIC ACCURACY—which means the accuracy of an instrument in measuring changing or dynamic conditions. TRANSAIRE Dynamic Accuracy is unparalleled. Solves the problem of process engineers who realize that an instrument accurate to a fraction of a degree in measuring static conditions can be in error by many degrees when temperature is changing.

2. DYNAMIC COMPENSATION—which means ability to compensate for inherent lags both in measuring system and rate of heat transfer of process medium. TRANSAIRE does this by introducing derivative action (Speed-Act) into measuring circuit. The result is Dynamic Accuracy, with a speed of response seldom thought possible, permitting much closer automatic temperature control.

TRANSAIRE is the first step in Taylor's TRANSET* Control System. Step No. 2 is the Taylor TRI-ACT* Controller. Step No. 3 is the Taylor TRANSET Recorder or Indicator. All three combine into the already famous complete Taylor TRANSET Control System. **Write for Bulletin 98097.** Taylor Instrument Companies, Rochester, N. Y., and Toronto, Canada.

*Trade-Mark

Instruments for indicating, recording and controlling temperature, pressure, humidity, flow and liquid level.



PRESSURE:

Taylor TRANSAIRE Pressure Transmitter with narrow range spans lets you measure and transmit minute pressure changes up to 1000 feet. Works on simple force-balance principle. Accurate to $\frac{1}{2}\%$ of the selected short range span (conventional devices are *only* accurate up to $\frac{1}{2}\%$ of upper range limit). Sensitive to pressure changes of $\frac{1}{2}$ " water. Here's accuracy and sensitivity never before thought possible in measuring process pressures—plus the convenience of suppressed ranges at high pressure levels.

THREE IMPORTANT ADVANTAGES:

1. Range spans of 20 and 40 psi available throughout range limits of 35 to 415 psia.
2. Volumetric type pressure system is extremely accurate, practically clog-proof, has corrosion-resistant 316 stainless steel diaphragm.
3. Temperature and barometric compensation for higher accuracy of measurement and control.

Taylor Instruments
— MEAN —
ACCURACY FIRST

IN HOME AND INDUSTRY

When inquiring check CP 4536 on handy form, pgs. 2-3



At Buckley Brothers—Petroleum Terminal. This Connecticut company selected Capacilog to record and control temperatures in two huge storage tanks with an 8 million gallon capacity.



Instrumentality in action ... for accuracy!

Specify the Wheelco Capacilog ... for the highest standards of accuracy. The Capacilog is a direct reading, non-balancing method of detecting changes in a process through a measuring circuit which achieves accuracy formerly obtainable only through the use of potentiometric or null type systems.

Ideal for temperatures common to chemical processing through the use of a resistance thermometer system, the Capacilog gives accurate measurement, indication and control with a permanent record. A variety of standard charts are available within a wide scale range—from -300°F. to +1000°F.

Accuracy with short or long leads, ease of installation, simplicity and economy are the leading reasons why more and more manufacturers are specifying the Wheelco Capacilog for applications in the chemical industry.

Wheelco Instruments Company, 841 W. Harrison St., Chicago 7, Illinois

wheelco  **electronic controls**

When inquiring check CP 4537 on handy form, pgs. 2-3

PROCESS INSTRUMENTATION

Measures vacuum at six locations . . .

easy-to-use unit has little zero drift with organic vapors

Uses: Measuring vacuum in coat-ers, dehydrators, vacuum furnaces and other industrial high vacuum equipment. Should be particularly well suited for checking pump operating conditions because of expanded scale in region of diffusion pump fore-pressures. Range is from a few microns to 1 millimeter of mercury.

Features: Available with two, three, four, five or six stations, all reading on single meter. Extremely simple to use, requiring only that operator turn on and read pressure.

No harm results from operation at full atmospheric pressure. In presence of organic vapors, zero drift is reduced to a minimum because the low operating temperatures in the gauge cause little decomposition.

Description: More than half the range of indicating needle of Thermocouple Gauge Type TG-09 is devoted to region below 60 microns. Smallest meter division represents 5 microns; 1000 microns is highest numerical value indicated.

Unit operates from 115 volt 60 cycle circuit, is sturdy, easily portable and convenient for displaying continuous readings at some distance from point of measurement. Gauge tube may be mounted vertically and plugged directly into control cabinet with cable omitted. Or, it may be used with a cord several hundred feet long in place of 10 foot length normally supplied.

Metal housing of tube terminates in 1/8" IPS nipple which may be threaded into a suitable coupling and threads sealed with high vacuum wax. If preferred, connection may be made with CGB connector, or with short piece of rubber tubing covering butt joint between gauge tube and pipe to vacuum system.

This is a thermocouple type vacuum gauge in which temperature differential depends on heat loss by gas conduction which, in turn, depends on gas pressure. Voltage regulator circuit keeps thermocouple heating current constant despite line fluctuations.

Source: Addition to line of vacuum gauges made by Vacuum Equipment Department, Distillation Products Industries, Dept. CP, Rochester 3, N. Y. . . . or for more information check CP 4538 on handy form, pages 2 & 3.

New answers to present pH problems

With new developments in pH equipment, covering both electrodes and electrode housings, plus 26 years experience in pH instrumentation, L&N has new answers to many industrial pH problems. Furthermore, a unique, fast, "Controllability Analysis" service, accurately points to the control system which will solve specific problems.

Entirely waterproof construction featured in the new electrodes makes them ideal for humid or wet locations by eliminating electrical leakage and preventing penetration by process liquids.

One of the assemblies is an immersion type unit for use in open channels and tanks. Made of light, corrosion resistant plastic, it operates in many places which formerly required a flow type unit. This eliminates the need for both pump and sampling lines.

Another new plastic electrode assembly features convenience and stability if a flow type unit must be used. It is light, small and easy to install. Where plastic might not suit, we still supply assemblies of cast iron or cast iron and Pyrex.

Two families of recording and controlling instruments are available: the familiar, accurate and reliable Micromax and the newer but equally dependable Speedomax continuous balance instrument. Both are available with either electrical or air actuated control systems.

For application engineering, simply fill in one of our "Controllability Analysis" forms. Our engineers can then tell how closely pH can be held with either present or proposed plant layout. Simply write Leeds & Northrup Co., 4995 Stenton Ave., Phila. 44, Penna.

L&N
LEEDS & NORTHRUP
MEASURING INSTRUMENTS • TELMETERS • AUTOMATIC CONTROLS • HEAT-TREATING FURNACES

Jrl. Ad N-96(6c)

When inquiring check CP 4539 on handy form, pgs. 2-3

FASTER...EASIER

**PRECISION
DEW POINT
INDICATOR**



★ The Alnor is the only dew point indicator that is a complete unit in itself . . . it is readily portable and does not require external coolants or auxiliary apparatus.

★ Controlled testing conditions are assured. Indications take place in an enclosed chamber . . . dew or fog is observed suspended in air—not on a polished surface. This means greater accuracy, faster reading—every time.

★ Simple, direct operation of the Alnor Dewpointer assures laboratory accuracy by non-technical personnel. Substantial carrying case protects it against the usual hazards of portable use.

★ Available in three ranges—for dew points between minus 20 deg. F. and room temperatures, from minus 80 deg. F. to 0 deg. F., and from -80 deg. F. to room temperature.

Write for Descriptive Bulletins, Illinois Testing Laboratories, Room 504, 420 N. LaSalle St., Chicago 10, Ill.

Alnor

PRECISION INSTRUMENTS FOR EVERY INDUSTRY

When inquiring check CP 4540 on handy form, pgs. 2-3

CHEMICAL PROCESSING

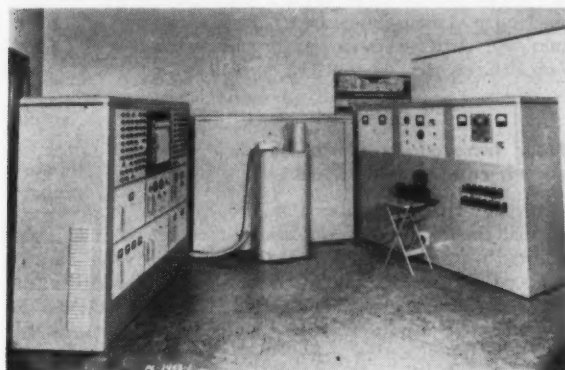
PROCESS INSTRUMENTATION

Pen-and-ink record for analyses of 20 metals in 2 minutes . . .

results from spectrometer are comparable to those by chemical procedures

Uses: For spectrometric analysis of a wide variety of metals (including stainless steel and similar alloys) and other inorganic materials.

Features: Spectrometer provides pen-and-ink recorded analyses of samples, element by element, within a period of 2 minutes or less. Single instrument can handle as



Spectrometer applicable to wide variety of metals and other inorganics

many as 25 elements, and up to 20 simultaneously. It is not limited to one type of analysis. Results are comparable to chemical analyses.

Description: "Production Control Quantometer" spectrometer can produce multiple copies of analyses for high-speed analytical control when desired.

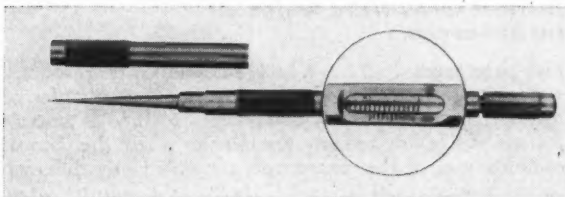
Source: Development of Applied Research Laboratories, Dept. CP, Glendale 4, Calif. . . . or for more information check CP 4541 on handy form, pages 2 & 3.

Gauging bore of glass tubing now precision measurement . . .

instrument good for 0.01 to 5.00 mm circular openings

Uses: Micrometer-type gauge for inside measurements of glass tubing. Can also be used for measuring other bores or circular openings.

Features: Precision instrument — scale has vernier



Precision, micrometer-type glass tubing gauge

permitting inside measurements from 0.01 to 5.00 millimeters.

Description: Needle of the gauge is made of specially hardened steel; a needle cap protects the needle point when the instrument isn't in use.

Source: Product of E. Machlett & Son, Dept. CP, 220 East 23rd St., New York 10, N. Y. . . . or for more information check CP 4542 on handy form, pages 2 & 3.

MAY, 1951

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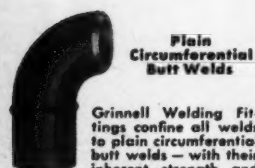


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Thickness

Uniform wall thickness at all points permits perfect lineup with pipe, O.D. and I.D. No thinning of long outer wall... no thickening of short inner wall.



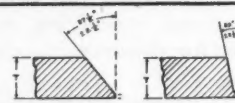
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True circular section at all points makes fitting easy to align and weld... no distortion or flattening to affect flow adversely.



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Briefs . . . from contemporary publications

Here's a quick look at interesting articles appearing in other publications,
... as selected by Technical Editor, Harry McCormack

Determining hydroxy compounds in amine mixtures

One-page article describes method developed in order to follow the alkylation of amines with alcohols. Reagents and procedure are stated. Results of analyses of six reaction mixtures are tabulated and found to be same as calculated values. ("Analytical Chemistry", Jan. 1951, page 117)

Uses for wild gourd seeds

Four-page paper gives results of an experimental investigation covering the possibility of using perennial wild gourds as a new domestic source for oil and meal. Solvent extraction was used to separate oil and meal. Meal that was processed and the analyses of its components are tabulated. Physical and chemical characteristics of oils are tabulated and compared with linseed and soy G. Oils were subjected to bodying and drying tests and used in two varnish and one paint formulations. All data are tabulated in 10 tables. ("Journal of American Oil Chemists' Society", Dec. 1950, page 571)

Infrared absorption spectra of 64 materials

Infrared spectrophotometer was used to obtain transmission spectra for 64 materials, and to show the transmission plots for them. Methods used in the study are specified so that one may follow the procedure and compare plotted transmission curves. Article consists of 20 pages, 17 figures and 1 table. ("Analytical Chemistry", Dec. 1950, page 1478)

Vertical transportation

Conveying methods used to move goods and machinery from one level to another are treated in 4-page article. Comments are made on freight elevators — their floor space location, passageways to them, area, and carrying capacity. Discusses the place of escalators in the system of transportation. Other items covered are pallet elevators, spiral conveyors, dumb waiters and ramps. Conditions which must be studied to reach an intelligent conclusion with regard to equipment for installation are discussed. Includes 3 photos. ("Plant Engineering", Jan. 1951, page 48)

Review of analytical chemistry

Reviews and their bibliographies are given in 95-page article. Reviews include light absorption spectrometry, infrared spectroscopy, ultra violet absorption spectrophotometry, x-ray absorption, potentiometric titrations, electron microscopy, chromatographic systems, distillation, extraction, ion exchange, organic microchemistry, inorganic

microchemistry, inorganic gravimetric analysis, volumetric analytical methods for organic compounds, gas analysis, nucleonics, polarograph theory, instrumentation and methodology, characterization of organic compounds. ("Analytical Chemistry", Jan. 1951, page 2)

New laboratory fume hoods cut air conditioning load

Four-page article describes fume hoods which are designed so that the quantity of air passing through them is nearly constant, irrespective of door opening. Hood face is reduced by new design. Air requirements for satisfactory fume removal are cut to one fourth the conventional requirement. Includes 3 figures, 2 tables. ("Heating, Piping and Air Conditioning", Jan. 1951, page 113)

Waste separator operation improved with self-adjusting skimmers

A self-adjusting skimmer used to remove oils from the waste waters of a petroleum refinery is described in 4-page article, illustrated with 5 figures.

Skimmer is easy to make and requires practically no attention to operate. It should be useful wherever a material lighter than water is to be removed from waste waters. ("Petroleum Processing", Dec. 1950, page 1300)

Unit operations

Sixth consecutive review on this subject contains 16 sections with excellent literature bibliographies for each section. Some sections include recent patents. Article consists of 8 pages with some photos of recent equipment. ("Industrial and Engineering Chemistry", Jan. 1951, page 37)

Thermal conductivity bridge for gas analysis

Five-page paper describes a bridge developed to give quick and accurate results in determining the concentration of hydrogen in a H_2 - CO_2 -air admixture. Method is suitable for analysis of any ternary gas mixture where the thermal conductivities of the components are sufficiently different. Includes 8 figures, 4 tables. ("Analytical Chemistry", Jan. 1951, page 143)

X-ray diffraction identifies natural, synthetic rubbers

Ten-page article gives results of a study of diffraction patterns secured from certain rubber stocks. Explains x-ray diffraction techniques used in obtaining these patterns. Equipment necessary is listed and illustrated with photos.

CHEMICAL PROCESSING

Shows x-ray patterns secured from various uncompounded rubbers and x-ray spectrometer patterns for six different rubber types. Procedures and equipment used in the x-ray spectrometric investigations are described. Comments are made as to profitable extensions of this work. Includes 3 tables, 17 figures. (*ASTM Bulletin*, Jan. 1951, page 71)

Platforming natural gasoline

Basic principles of the platforming process are stated. Examples of products obtainable from natural gasolines of divergent composition are cited. When naphthenes are present in any quantity, process produces benzene and toluene. Costs for such a plant and its operation are stated, along with certain assumptions and the conditions which predict a satisfactory operating return. Article includes 4 pages, 7 tables and 1 flow diagram. (*Petroleum Refiner*, Dec. 1950, page 109)

Polyalkylene glycol lubricants

Properties of polyalkylene glycol synthetic lubricants are briefly reviewed in 5-page article. Typical properties of five greases, three lubricants are tabulated. Wear tests, using modified SAE extreme pressure lubricant testing machine, are tabulated. Application tests are discussed and shown in 5 tables, 7 photos. (*Industrial and Engineering Chemistry*, Dec. 1950, page 2436)

Centrifugal pump applications

Some fundamental problems in applying centrifugal pumps in the petroleum industry are presented in 10-page article. Gives characteristics of centrifugal pumps and ten items which must be evaluated to assure proper pump selection. Article is aimed at engineers whose duties are to select, procure, operate and maintain various types of pumping equipment. Includes 14 figures. (*Petroleum Refiner*, Jan. 1951, page 119)

Functional selection of synthetic lubricants

Basic properties are summarized which serve as guides in selecting synthetic lubricants for specific applications. Fundamental properties are listed and commented on.

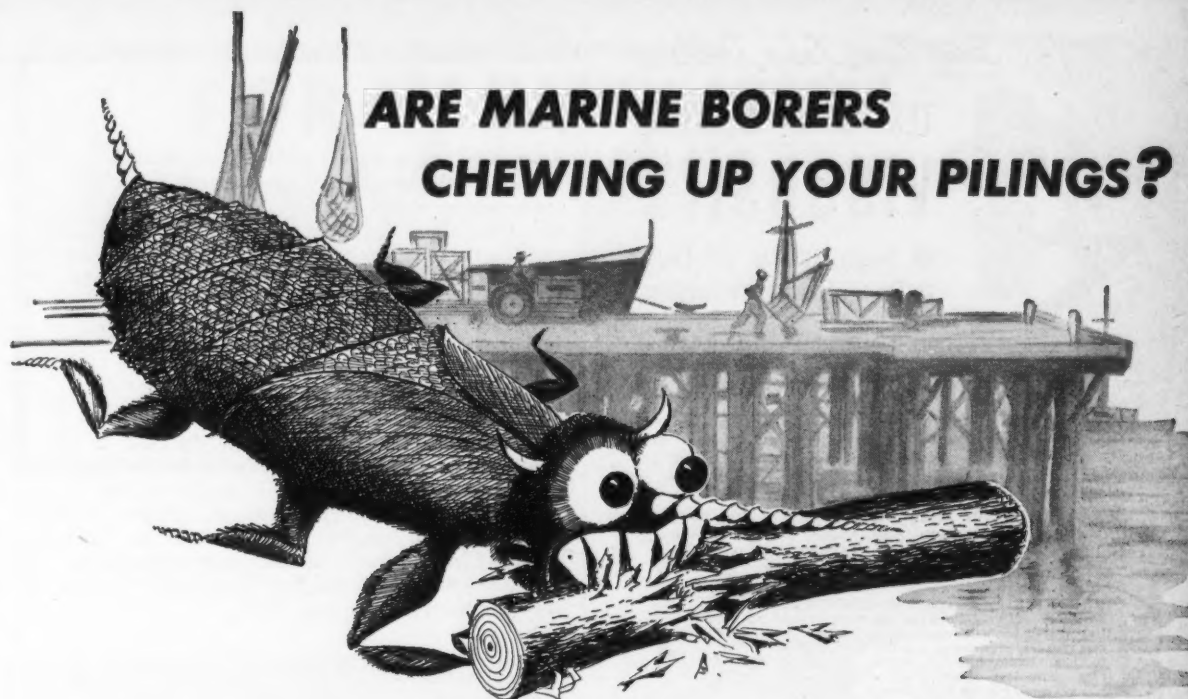
Functional properties of 61 types of synthetic oils are tabulated. Article consists of 11 pages, 4 tables and 4 figures. (*Industrial & Engineering Chemistry*, Dec. 1950, page 2415)

Industrial water intakes

Author, a commercial diver, tells of the things which may happen to reduce the flow of water at industrial intakes. Comments on varied construction of intakes. Recommendations are made as to how troubles may be minimized. 2 pages, 2 photos. (*Plant Engineering*, February, 1951, page 52)

Fritted fluorothene filters

A flame spraying technique making possible the fabrication of filter discs from powdered fluorothene is described in 2-page article. Tests made on these filters with regard to pore size, filtration rate, and effects of various reagents are covered. Includes 1 figure. (*Modern Plastics*, Feb. 1951, page 102)



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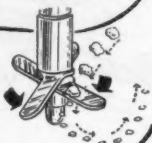
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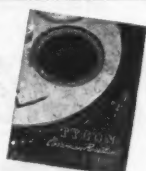
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BRIEFS

Oil solubility of phenolic resins

Seven-page article reports results of an experimental study of the oil solubility of various phenol-formaldehyde resins condensed by means of various catalysts. Physical properties of the resins are tabulated. Methods used in preparing varnishes from condensation products are described. Characteristics of varnishes are discussed and tabulated. Varnishes tested in customary manner and results are also tabulated. Includes 10 tables, 1 figure. ("Industrial and Engineering Chemistry", Jan. 1951, page 134)

Aromatics from petroleum

Article describes a process recently disclosed by Atlantic Refining Company. Products yielded from various charge stocks are tabulated. Process is similar to other catalytic reforming, but a superior platinum catalyst is claimed. Regeneration of catalyst is thought to be unnecessary. Company contemplates licensing other processors. Two pages, one flow sheet, and four tables. ("Petroleum Processing", March, 1951, page 249)

Spray drying of Santomerse

Eleven-page paper presents experimental results when Santomerse was spray-dried in a Tubulaire laboratory spray dryer. Effects of operating variables upon bulk density and moisture content of product are noted. Variations made include: addition of organic solvents; changes in feed temperature and concentration; varied atomizing pressure; varied temperature of drying medium. Data secured are tabulated. Includes 17 figures, 9 tables. ("Chemical Engineering Progress", Jan. 1951, page 29)

BHC-DDT dust preparation

Authors describe a technique which accomplishes the uniform admixture, in any desired rates, of the BHC-DDT and the inert material which acts as the carrier. Flow sheet depicts the mixing of active ingredients. Peculiar physical properties of admixture commented on enable the processor to secure final product in form and composition desired. 3 Pages, 1 figure, 1 flow sheet, and 1 photo. ("Agricultural Chemicals", March, 1951, page 59)

Determination of moisture in sodium alkyl sulfonates

Extended production and use of this detergent indicates the desirability of analytical methods for water content. Authors describe several methods they have tested.

Some were neither accurate nor rapid, some were accurate but tedious. A method is recommended which is both accurate and rapid.

Results by various methods are tabulated; results from two laboratories using recommended method are also tabulated. Three pages and five tables. ("Journal of the American Oil Chemists' Society", March, 1951, page 81)

Nitrites as selective solvents

Article is result of tests in an attempt to find solvents which are highly selective and have reasonable capacity for extraction of aromatics from petroleum hydrocarbons. Nitrites, having general formulae, were found most highly

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CHEMICAL PROCESSING

BRIEFS

selective. Screening tests used are stated and results tabulated. Selectivity and capacity are commented on. Structure as related to selective solvent action is studied and results tabulated. Includes 5 pages, 5 tables, 4 figures. (*Industrial and Engineering Chemistry*, Jan. 1951, page 121)

Determination of lithium in rocks

Authors present a fluorometric method recommended as more accurate and less tedious than the customary gravimetric method. Necessary equipment and procedures are described and certain precautions are emphasized.

Accuracy of method is shown in tabulated comparison of values obtained by analysis of ores and synthetic samples. 4 pages, 5 figures and 3 tables. (*Analytical Chemistry*, March, 1951, page 478)

Aromatics by platforming

Authors discuss and describe the catalytic reforming process developed and being commercially installed by Universal Oil Products. Theoretical considerations for successful operation are presented.

Experimental laboratory results as well as results secured in commercial units are tabulated as to charging stocks and products secured. Production of benzene, toluene or aviation gasoline stocks is commented on. Four pages, eight tables, and two photos. (*Petroleum Processing*, March, 1951, page 264)

Water conservation facilitated by cooling towers

Author comments on our diminishing water resources and indicates the part the cooling tower may play in water conservation where water is used for cooling purposes. Describes types of cooling towers and states performance factors. Three pages and four photos. (*Industry and Power*, March, 1951, page 73)

Industrial status of ductile iron

Author states some facts about the extent to which ductile iron is now being applied in industry. States various grades in which it is available and tabulates their properties. Enumerates fields in which material is particularly applicable and shows photos of equipment fabricated from it.

Table shows comparative machinability of several gray irons as compared with ductile irons, both as cast and after annealing. Eight pages, fourteen figures and five tables. (*Mechanical Engineering*, February 1951, page 101)

Breaking water-tar emulsions with surfactants

Authors report on an experimental investigation of the conditions and surfactants yielding best results in breaking water-tar emulsions. Tar compositions and tar and water ratios were evaluated as to permanency of emulsion or surfactant necessary to break emulsion. Nine tars and eight surfactants were used in the study. Results are shown in tables and graphs. 3½ pages, 2 tables and 3 graphs. (*Industrial and Engineering Chemistry*, February, 1951, page 521)

MAY, 1951

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New Literature

Complete plug valve manual stresses power operation

Forty-two-page bulletin contains complete compilation of technical data covering the use of pneumatic, hydraulic, and electric operators for lubricated plug valves. Contents include typical piping diagrams, mounting and installation data, arrangements for both side- and top-mounted motor controls, closing speeds, and wiring data.

Power-operated valves are actually protective equipment and are a favorable factor in lowering insurance rates. Trend toward this type has grown rapidly, especially in the petroleum, gas, chemical, and process fields. Their use insures more positive operation; reduces or eliminates labor of operation; permits faster operation; provides remote operation of valves not conveniently accessible; tells at a glance which valves are open or closed; permits coordination of batteries of valves operated in regular cycles; economizes by use of centralized control; eliminates human error and lessens chances for misinterpretation of instructions; and provides automatic closing in cases of line breaks.

Of great interest in this multi-color bulletin are the extensive photographs showing actual installations of these valves in many fields of application. Bulletin V-214 is issued by Rockwell Manufacturing Company, Dept. CP, 400 N. Lexington Ave., Pittsburgh 8, Pa. When inquiring specify CP 4552 on handy form, pages 2 and 3.

Fresh resin in same cartridge cuts demineralizer upkeep

Six-page folder gives specifications for small water demineralizer that delivers up to 10 gph. Principal feature is permanent cartridge into which fresh resin is poured when old resin is exhausted; re-use of cartridge cuts maintenance expense. Other features and full details are contained in "Permanent Cartridge", issued by Penfield Manufacturing Co., Inc., Dept. CP, 19 High School Ave., Meriden, Conn. When inquiring specify CP 4553 on handy form, pages 2 and 3.

Slide rule aids selection of flanges and couplings

Data to aid in selecting flanges and couplings can be quickly read from convenient slide rule selector. Data include sizes, thickness, OD of raised face, number and diameter of holes, and bolt circle. Additional data are tabled on both sides. "Flange and Coupling Selector" is issued on letterhead request to Nooter Corporation, Dept. CP, 1400 S. 2nd St., St. Louis 4, Mo. When inquiring specify CP 4554 on handy form, pages 2 and 3.

Presents vacuum cleaners for industrial uses

Industrial vacuum cleaners, their uses, and accessories are detailed in illustrated 8-page bulletin. Cleaners have many applications, doubling for conveyors, reclaimers, and pumps. Units may be operated from stationary system or from mobile vacuum power sources; extension handles give them a reach of 12 to 15 feet from operator. Other features are described in Bulletin 125D, issued by The Spencer Turbine Company, Dept. CP, 488 New Park Ave., Hartford 6, Conn. When inquiring specify CP 4555 on handy form, pages 2 and 3.

Shows speed recorders and tachometers

Revised 20-page catalog presents 2 types of speed recorders and accessory tachometers. Operating principles of recorders are discussed in detail, and their adaptability is shown by numerous application photographs. Line of tachometers features a compact, general-purpose instrument which operates in any position at speeds to 2500 rpm; other standard and explosion-proof models operate at speeds to 30,000 rpm.

Installation, dimensions, couplings, supplies, and other aspects are all thoroughly investigated in Catalog N-27, issued by Leeds & Northrup Company, Dept. CP, 4934 Stenton Ave., Philadelphia 44, Pa. When inquiring specify CP 4556 on handy form, pages 2 and 3.

Flat tops of conveyor chain carry packages, bottles

Four-page illustrated folder gives dimensions and other data on conveyor chain and sprocket wheels for transporting small containers, bottles, packages, or parts through such operations as washing, bottling, packing, capping, or labeling. Each pitch of chain consists of hinge-type link with a flat top, and a pin to hinge adjacent links together. Chain can be detached at any convenient pitch, and no coupler links are needed.

Specific applications and full details are contained in Folder 2344, issued by Link-Belt Company, Dept. CP, 307 N. Michigan Ave., Chicago 1, Ill. When inquiring specify CP 4557 on handy form, pages 2 and 3.

Two permanent magnets in hump remove tramp iron from lines

Removal of tramp iron from materials conveyed in pneumatic, gravity flow, or liquid lines is the function of 2-magnet hump described in 4-page bulletin. Construction and application data, information on selection, and engineering diagrams are included in 2-color Bulletin 702, issued by Eriez Manufacturing Company, Dept. CP, Erie, Pa. When inquiring specify CP 4558 on handy form, pages 2 and 3.

Research on one-coat paints told in government report

Two years of research on the Signal Corps' "One Coat Paint Project" are covered in 222-page report, including photographs, graphs, and tables. Report is divided into 8 major parts: basic research on process of drying; drying paint films with light energy; electrographic method for testing paint permeability; panel paint tests; improvements in development and evaluation of coatings; improvements in lab equipment; studies on adhesion; and bibliography on chemical reactions in the formation and drying of coating materials.

Developments of particular interest include findings on the solid phase of oils; drying tests conducted under ultraviolet light; and studies in the use of catalysts to produce heavier paint coatings. To obtain PB 101 680, remit \$8 (for microfilm) or \$28.75 (for photostat) direct to Librarian of Congress, Library of Congress Photoduplication Service, Publication Board Project, Washington 25, D.C.

Gives properties and uses of cellular rubber

Three-color, 20-page booklet describes properties, uses, forms, and tolerances of cellular rubber. Such aspects as the influence of heat and aging are considered for specific stocks, and graphs are used extensively. "Cellular Rubber" is issued by The Sponge Rubber Products Co., Dept. CP, Shelton, Conn. When inquiring specify CP 4559 on handy form, pages 2 and 3.

Phase equilibria explained and diagrammed in book

Omitting rigorous thermodynamic proofs, 200-page book presents basic principles of heterogeneous phase equilibria for systems comprising one, two, three, and four components. Approach is general and rather practical; includes phase diagrams. To obtain "Principles of Phase Equilibria", remit \$3.50 direct to McGraw-Hill Book Company, Dept. CP, 330 W. 42nd St., New York 18, N. Y.

Book surveys procedures used in chromatography

Recent adsorption procedures applicable to problems in chromatography are surveyed in 368-page book. First section gives general discussion of the principles and practice; covers the separation of stereoisomers, interaction between adsorbent and adsorbed substances, and exchange adsorption; and discusses adsorbents and their standardization, solvents, apparatus, partition chromatography, and the boundary method.

Second section specializes in the differences in properties of various organic substances important in chromatography — chlorophyll, porphyrins, bile pigments, etc. Inorganic chromatography is also surveyed in last chapter, with emphasis on separation of cations. To obtain "Progress in Chromatography" remit \$8 direct to John Wiley & Sons, Inc., Dept. CP, 440 Fourth Ave., New York 16, N. Y. When inquiring specify CP 4560 on handy form, pages 2 and 3.

Variety of floor conveyors shown in 90-page catalog

Printed in 2 colors, 90-page catalog features two types of chained floor conveyors. Many other types — slat, apron, scraper, roller flight, etc — are also shown. Typical drive and take-up ends, pusher dogs, sprockets and roller turns, cross sections, curves, inclines, and declines for use in these systems are included. Photographs, standard outline drawings, and perspective drawings complete contents. Catalog 51 is issued on letterhead request to Jervis B. Webb Company, Dept. CP, Detroit, Mich.

Cast monel uses, properties discussed in booklet

Eight-page booklet contains valuable information concerning the production of cast monel and the wide range of desirable physical and mechanical properties obtainable. Use of monel in handling acids and alkalis, as well as its machinability and weldability, are thoroughly discussed. Detailed charts show its corrosion resistance to various materials, its mechanical and physical properties, and the chemical composition of different types.

"Uses Broaden for Cast Monel" is issued by The Cooper Alloy Foundry Co., Dept. CP, Hillside 5, N. J. When inquiring specify CP 4561 on handy form, pages 2 and 3.

MAY, 1951



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IT SAVED \$75,000 IN
PIPING WITH A \$5,000
VALVE INVESTMENT**

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Corp., embodying advanced engineering technics, and *absolutely unique*—although it is now being imitated—the patented BalanSeal is ideally suited for use wherever a collecting system is required for a series of safety-relief valves. It permits a higher downstream pressure—and consequently, smaller piping. Yes! The cost of a BalanSeal valve installation is a mere fraction of the savings effected in down-stream piping. (*In one case, a cost reduction of \$75,000 resulted from a \$5,000 investment in BalanSeal Valves.)

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BalanSeal is the ultimate in safety-relief valve design and construction. The bellows, which also distinguishes the FarriSeal design, is so proportioned as to eliminate any unbalanced forces on the valve disc—which is perfectly balanced on its seat at the set pressure. Like all other FarriSeal Valves, perfect protection is provided for guide, stem and spring by completely isolating these parts from the lading fluid.

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Liquid-liquid extraction told in 422-page book

Containing 422 pages, book presents a complete review and organization of unit operations in liquid-liquid extraction. All phases of the subject are covered.

Contents include physical chemistry of liquid-liquid equilibria; prediction of equilibria; thermodynamics of non-ideal solutions; choice of solvent; diffusion in liquids; theoretical discussion of mass transfer; design of extraction systems, both flowsheets and equipment; descriptions of equipment and their operating characteristics; and a brief review of modern chemical processes using liquid extraction.

Many diagrams are used throughout the book to insure clarity of presentation, and detailed tables of notation and literature references are given for each chapter. To obtain "Liquid Extraction", by Robert E. Treybal, remit \$7.50 direct to McGraw-Hill Book Company, Dept. CP, 330 W. 42nd St., New York 18, N. Y.

Line of seven load cells weighs up to 50,000 lb

Two-page bulletin describes, illustrates, and specifies 7 load cells ranging in weighing capacity from 500 to 50,000 lb. Cells depend upon electrical resistance measurements of resistance wire strain gages bonded to the load-carrying column.

Bulletin 324 is issued by Baldwin-Lima-Hamilton Corporation, Dept. CP, Philadelphia 42, Pa. When inquiring specify CP 4564 on handy form, pages 2 and 3.

Aspects of textile dyeing presented in bulletin

Briefly presenting various theories of textile dyeing, Technical Bulletin 818 is issued by Advertising Dept., American Cyanamid Company, Calco Chemical Div., Dept. CP, Bound Brook, N. J. When inquiring specify CP 4565 on handy form, pages 2 and 3.

Freon or ammonia used in coolers

Twelve-page catalog section describes and illustrates freon or ammonia coolers of the dry expansion type. Capacities range from 2 to 232 tons of refrigeration at water flow rates from 15 to 575 gpm.

Log mean temp table, cooler selection data, dimensions, pressure drops, and typical piping arrangements are in-

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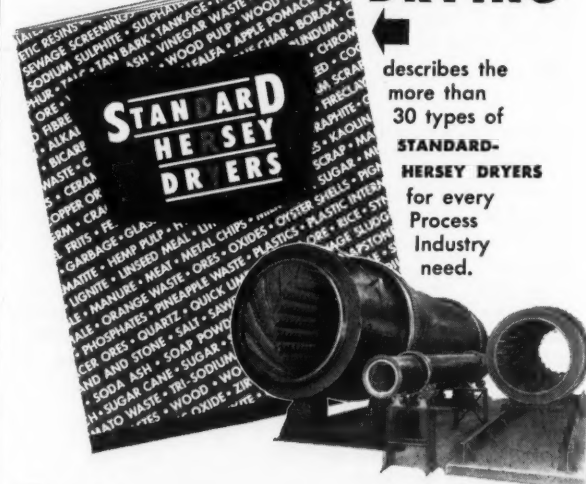


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When inquiring check CP 4566 on handy form, pgs. 2-3

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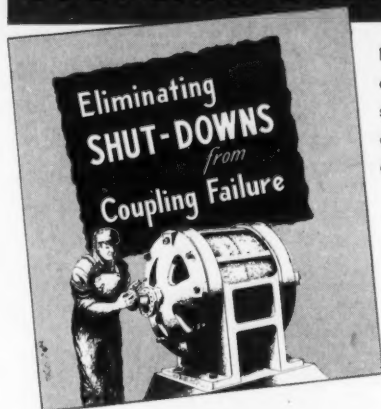
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When inquiring check CP 4567 on handy form, pgs. 2-3

CHEMICAL PROCESSING

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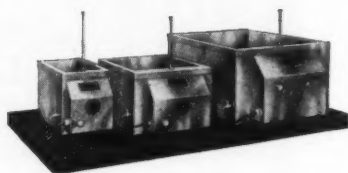
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When inquiring check CP 4569 on handy form, pgs. 2-3

NEW LITERATURE

cluded. Catalog Section 101 is issued by Patterson-Kelley Co., Inc., Dept. CP, 373 Burson St., East Stroudsburg, Pa. When inquiring specify CP 4570 on handy form, pages 2 and 3.

Use of radiant heaters in petroleum industry

Petroleum heat processing, using radiant gas heat in tubular heaters, is the subject of 16-page illustrated bulletin. Contents describe the heating principle which distributes radiant heat uniformly around and along the tubes. Bulletin S-6.2 is issued by Selas Corporation of America, Dept. CP, Philadelphia 34, Pa. When inquiring specify CP 4571 on handy form, pages 2 and 3.

Shows use of resins in adhesives

Eighteen-page booklet reports on the contribution of resins to film cohesion, surface tack, bond strength, and other properties of adhesives.

Three adhesives types are covered: rubber, cellulose, and water soluble. Various resins are cited to show how they are used. Examples are aid to the formulator in selecting a resin for use in a specific adhesive.

"Resins for Adhesives" is issued by Hercules Powder Company, Dept. CP, Wilmington, Del. When inquiring specify CP 4572 on handy form, pages 2 and 3.

Monochromators, other instruments shown

Eight-page publication presents details on one-meter grating monochromator, flame photometer, and the use of micromulls in obtaining spectra. Other articles of general interest are included. "Better Analysis", Vol 2, No. 1, is issued by Baird Associates, Inc., Dept. CP, 33 University Rd., Cambridge 38, Mass. When inquiring specify CP 4573 on handy form, pages 2 and 3.

Hard chrome plating takes only 5 steps

Four-page, 2-color bulletin specifies and illustrates industrial hard chrome plating unit. Unit is self-contained, weighs about 70 lb, and has 5-step operation. Bulletin IC 20 is issued by Ward Leonard Electric Co., Industrial Chrome Div., Dept. CP, 31 South St., Mount Vernon, N. Y. When inquiring specify CP 4574 on handy form, pages 2 and 3.

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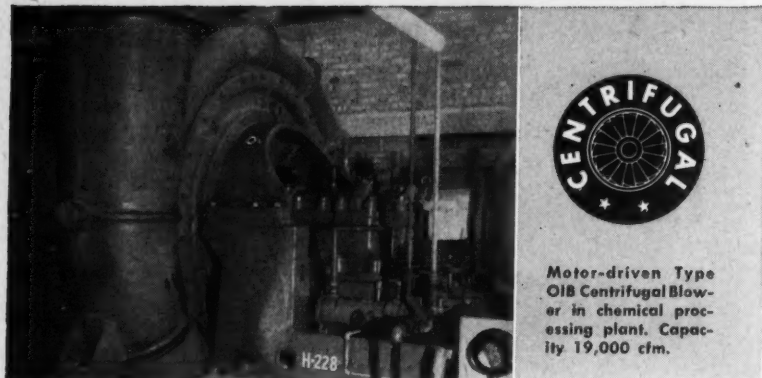
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Write for Bulletin I-10 for technical information C. M. KEMP MFG. CO. 405 E. Oliver St., Baltimore 2, Md.

When inquiring check CP 4575 on handy form, pgs. 2-3

Keep your eye on **V-P-I** WHEN SELECTING **BLOWERS**



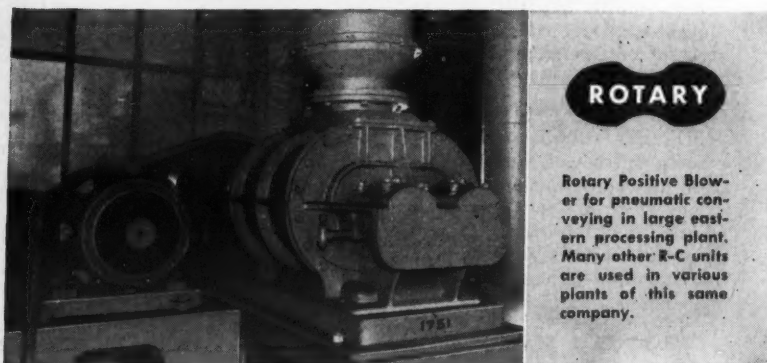
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OIB Centrifugal Blower
in chemical processing plant. Capacity 19,000 cfm.

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Rotary Positive Blower for pneumatic conveying in large eastern processing plant. Many other R-C units are used in various plants of this same company.

ROOTS-CONNERSVILLE



ONE OF THE DRESSER INDUSTRIES

When inquiring check CP 4576 on handy form, pgs. 2-3

NEW LITERATURE

How to safely handle ethylene oxide

Eighteen-page pamphlet gives safe procedures to be followed in handling ethylene oxide. Fire, explosion, and polymerization hazards are covered, as well as common dangers involved in handling, storage, waste disposal, and loading.

Considerable space is devoted to equipment for personal protection of handlers — clothing, goggles, masks, etc. Data are presented on possible results of over-exposure, and on first aid and medical treatment for exposure cases. All data are cross-referenced and documented.

To obtain Chemical Safety Data Sheet SD-38, remit 30c direct to Manufacturing Chemists' Association, Inc., Dept. CP, 246 Woodward Bldg., Washington 5, D.C. When inquiring specify CP 4577 on handy form, pages 2 and 3.

Quiet action reported for bronze diffuser

Designed for mixing steam and water to produce hot water, diffuser described in 2-page sheet is made of bronze. Staggered holes in concentric shells are reported to give quiet operation. Diffuser is available in 1 and 1½" IPS.

Containing dimensions and photographs, diffuser catalog sheet is issued by O'Brien Steam Specialty Co., Inc., Dept. CP, 341 Heffernan Bldg., Syracuse 2, N. Y. When inquiring specify CP 4578 on handy form, pages 2 & 3.

Equipment for oil fields shown in bulletin

Items of equipment designed for use in oil fields are described in illustrated bulletin. Items include chains, sprockets, oil-water separators, traveling water screens and pumps. Chains are featured, with ease of assembly stressed.

"Oil Field Chains" is issued by Dept. PR, Chain Belt Company, Dept. CP, 1600 W. Bruce St., Milwaukee 4, Wis. When inquiring specify CP 4579 on handy form, pages 2 and 3.

Tells results of research into cavitation

Twenty-page bulletin describes cavitation-pitting tests designed to determine relative resistance to pitting of recently developed materials and techniques for applying them.

Bulletin is illustrated with graphs,

NEW SLIDE CHART

gives you information on

- BENDING RADII
 - COIL DIAMETERS
- for Stainless Tubing and Pipe from 3/8" to 5" O.D.



Just write a note on your company letterhead and we will send your copy of this useful Carpenter Stainless Tubing Slide Chart

THE CARPENTER STEEL COMPANY
Alloy Tube Division Union, New Jersey

When inquiring check CP 4580 on handy form, pgs. 2-3



**SELF-CONTAINED
-CONTROLLED
-SUFFICIENT
-RELIANT**

The patented Farris Stacon Temperature Regulator is easily the most independent regulator available today. It's unique. It stands alone. It's trustworthy. It needs no watching. It's perfect for the man who wants no cause for worry... who wants to relax in the sure knowledge that his temperatures are constant.

Here's why Stacon stands alone in the field. It has no packing glands to leak or bind... the stem moves freely. The liquid in the bulb flashes to vapor in the power bellows, assuring hairtrigger response to move the disc. It operates with unbelievable accuracy—to within plus or minus 1 degree—and it operates with that accuracy under *all* conditions. Stacon provides air-operated accuracy at low, self-operated cost.

Get the details on the one truly outstanding temperature regulator—Stacon. Send for Bulletin 50-1000 to get all the details.

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When inquiring check CP 4581 on handy form, pgs. 2-3

CHEMICAL PROCESSING

FREE Data On Cleaning Air-Conditioners



THIS handy illustrated booklet tells how low-cost, efficient Oakite cleaning materials help you maintain your air-conditioning equipment. Tells how to get rid of lime scale—how to prevent it from forming. Describes simple, low-cost ways to prevent slime from fouling up lines, tanks, and spray jets. Tells how to descale cold diffusers—to clean finned coils of air-washers, aluminum plates and screens, glass filter screens.

FREE copy sent on request. Write Oakite Products, Inc., 18F Thames St., New York 6, N. Y.

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TRADE MARK REG. U.S. PAT. OFF.
MATERIALS • METHODS • SERVICE

Technical Service Representatives in Principal Cities of U.S. & Canada

When inquiring check CP 4582 on handy form, pgs. 2-3

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114 Liberty St., New York 6, N. Y.

Catalog No. 62
tells the "hole" story
—write for your copy.

When inquiring check CP 4583 on handy form, pgs. 2-3

MAY, 1951

NEW LITERATURE

charts, and photographs. Bulletin 02B7581 is issued by Allis-Chalmers Manufacturing Company, Dept. CP, 1181 S. 70th St., Milwaukee, Wis. When inquiring specify CP 4584 on handy form, pages 2 and 3.

Plastics molding powders meet MIL-P-14A specs

Complete information on thermosetting plastics molding powders is listed conform to MIL-P-14A specifications. CDC-195 is issued by General Electric Company, Dept. CP, Pittsfield, Mass. in 34-page booklet. All grades shown. When inquiring specify CP 4585 on handy form, pages 2 and 3.

Describes work gloves

Four-page bulletin describes canvas and cotton knit gloves processed with natural rubber, neoprene, or plastic. Contents include styles, sizes, etc.

Form P-1 is issued by American Rubberizing Company, Dept. CP, 617 Eleventh Ave., South, Minneapolis 4, Minn. When inquiring specify CP 4586 on handy form, pages 2 and 3.

Chemical control units and reagents shown

Fifty-page catalog shows equipment and chemical reagents for pH determination, chlorine control, soil testing, electroplating baths, vitamin studies, and analyses of water, sewage, and industrial wastes. 1951 catalog is issued by LaMotte Chemical Products Company, Dept. CP, Baltimore 4, Md. When inquiring specify CP 4587 on handy form, pages 2 and 3.

Details photocopying

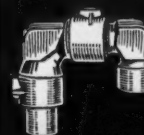
Sixteen-page booklet explains photocopying and its uses in industry. Charts compare it with manual recopying and commercial photoprint. "Photocopying" is issued on letterhead request to American Photocopy Equipment Company, Business Methods Div., Dept. CP, 2849 N. Clark St., Chicago 14, Ill.

Broad field of chemistry condensed to 224 pages

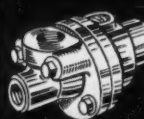
Condensed 224-page data book covers general, organic, inorganic, physical, quantitative, and qualitative chemistry. To obtain "Chemical Handbook", remit \$3.25 direct to Lefax Publishers, Dept. CP, Philadelphia 7, Pa. When inquiring specify CP 4588 on handy form, pages 2 and 3.



Standard Swivel Joints
For pressures from
125 psi to 15,000 psi.



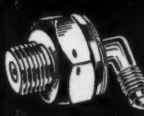
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For temperatures to
600° F. M.W.P.
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For 150-lb. steam,
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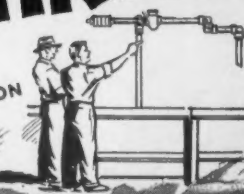


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BALL-BEARING SWIVEL JOINTS FOR ALL PURPOSES

When inquiring check CP 4589 on handy form, pgs. 2-3

EVERYBODY WINS— WHEN THIS WHEEL SPINS!

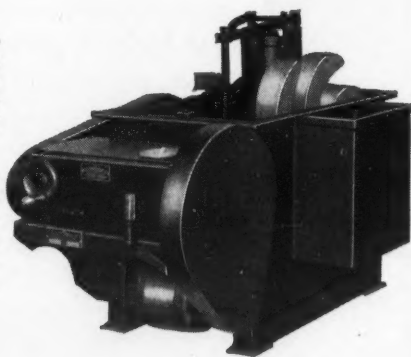


OMEGA ROTODIP METER is a "winner" for feeding liquids of all kinds: Acid and alkali solutions, suspensions, and emulsions. With its rotary dipper wheel — the heart of the Rotodip — this meter delivers at the precise flow rate required by the continuous processing or blending operation. Feeding rate is instantly adjustable, either manually or at the command of automatic pacing devices such as Builders Chronoflo Telemeter or Builders Pneumatic System.

Due to the unique design of the dipper wheel, normal fluctuations in the level of liquid within the meter do not affect its accurate performance. Rotodip Meters are fabricated of materials to suit job requirements: steel, cast iron, lead-lined, rubber-lined, all stainless-steel, etc. For complete information and Bulletins, address Omega Machine Company (Division of Builders Iron Foundry) 387 Harris Ave., Providence 1, R. I.

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• Rotodip Solution Feeders • Rotolock Feeders • Dust Collectors • Bucket Elevators



OMEGA
THE LAST WORD IN FEEDERS



When inquiring check CP 4590 on handy form, pgs. 2-3

NEW LITERATURE

Grease-retaining casings, roller chains shown

Flexible shaft couplings — roller chains — are covered in 4-page illustrated folder. Information given includes dimensions, weights, service factors, and power ratings. Detailed data are also given on 2 types of protective grease-retaining casings. Folder 2363 is issued by Link-Belt Company, Dept. CP, 307 N. Michigan Ave., Chicago 1, Ill. When inquiring specify CP 4591 on handy form, pages 2 and 3.

Details various controllers for temperature, pressure

Simple pneumatic proportional controllers for pressure and temperature are presented in detail in 16-page, well illustrated bulletin. Both types incorporate same basic mechanism — pneumatic feedback, cantilever leaf spring, and non-relay type pilot.

Contents of bulletin include data on operation, adjustments, construction, ranges, bulbs and other accessories, dimensions, and specific applications. Bulletin 207 is issued by Mason-Neilan Regulator Company, Dept. CP, 1190 Adams St., Boston 24, Mass. When inquiring specify CP 4592 on handy form, pages 2 and 3.

Driver stands as he rides 2000-lb fork truck

Fork truck described and pictured in 2-page bulletin is stand-up, driver-ride type. Other specifications: capacity, 2000 lb; lift, 117"; clearance, 72"; free lift, 47"; weight, 3450 lb. Features and applications are described in "Tier-master", issued by Mobilift Corporation, Dept. CP, 835 S. E. Main St., Portland 14, Ore. When inquiring specify CP 4593 on handy form, pages 2 and 3.

Offers basic background info on air conditioning systems

Twenty-page planning guide is slanted at those gathering information for proposed air conditioning systems. Terms used are general, not technical. Information includes the 5 functions an air conditioning system should perform; the 6 components needed; what to expect from air conditioning systems; and factors to consider when actually planning a system.

Illustrations of each kind of equipment are included along with installation photographs. Details and features of specific equipment are also given. Booklet B-5160 is issued by Westinghouse Electric Corporation, Sturtevant Division, Dept. CP, 200 Readville St., Hyde Park, Boston 36, Mass. When inquiring specify CP 4594 on handy form, pages 2 and 3.

Hardness, turbidity, impurities removed from water supplies

Twenty-four-page bulletin presents full and well-organized information on self-contained water treatment units for the removal of hardness, turbidity, color, and algae from industrial water supplies. Units are high-rate up-flow type, passing raw water through thick blanket of previously formed sludge in reaction zone.

Bulletin, which is profusely illustrated with photographs, sketches, and engineering drawings, covers general description; action of units; distinguishing characteristics;

Sicon

New, Improved

SILICONE BASE

**HIGH HEAT-RESISTANT
FINISH**

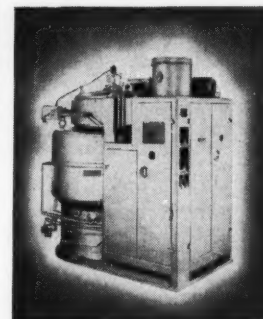
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Generating Unit is a case
in point —



☆ This unit has inside temperatures of up to 3,000° (F.) and develops full capacity in two minutes to deliver 1,000,000 b.t.u. A rugged finish is necessary to protect it not only against heat, but also against the corrosive and deteriorating influences of dirt, grime, oil, and climatic elements. SICON Aluminum is used because it answers these exacting requirements. Due to its quick drying it can be handled minutes after application. Write today for latest tech data describing many other SICON applications.

Sicon

Silicone-Base Finish is
manufactured exclusively by

**MIDLAND
INDUSTRIAL FINISHES CO.**

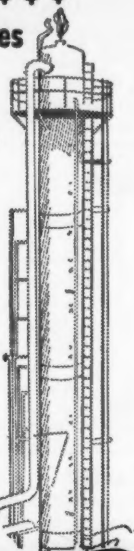
Waukegan, Illinois
ENAMELS • SYNTHETICS
LACQUERS • VARNISHES

When inquiring check CP 4595
on handy form, pgs. 2-3

CHEMICAL PROCESSING

Saving more \$\$\$ in oil refineries

Refinery engineers report dependable performance—day after day—on important cost-cutting reclamation processes... "transfer of bottom sediments in gravity-type oil-water separators to elevated decanting tanks"—"settled oil solids from sludge lagoons"—"cleaning out separator hoppers"—



CARTER
sludge
pumps

For processing of "problem" liquids, you will find the Carter sludge pump an actual economy! Specifically designed for handling of solid-laden, viscous and mildly corrosive liquids... practically eliminating emulsification, coagulation and agitation.

If you handle similar liquids—and have a problem... call us in. Our engineering staff will be glad to render a detailed, analytical report—at no obligation! Our latest technical bulletin, No. 5002, is almost ready for press. Gives complete data on sludge pumps—and their application to your problems. May we reserve a copy for you? Write today—on your company letterhead.

187 Atlantic St.

R. B. CARTER SALES
INC.
Hackensack, New Jersey

When inquiring check CP 4596
on handy form, pgs. 2-3

NEW LITERATURE

types and sizes; fields of application; advantages; capacity ratings; chemical dosing; operating results; and additional treatment steps. Final four pages give useful information—atomic weights, molecular weights, chemical reactions, and alkalinity determinations. Bulletin 9041 is issued by The Dorr Company, Dept. CP, Barry Place, Stamford, Conn. When inquiring specify CP 4597 on handy form, pages 2 and 3.

Presents general news items, specific lab equipment

Articles of technical and general information are contained in 32-page magazine which also shows photographs of over 50 items of lab equipment—clamps, balances, burets, colorimeters, and similar devices. "Labitems", Vol. 1, No. 1, is issued by Emil Greiner Company, Dept. CP, 20-26 N. Moore St., New York 13, N. Y. When inquiring specify CP 4598 on handy form, pages 2 and 3.

Fifty-six pages of equipment for steam, liquid control

Containing 56 pages of illustrations and engineering data, complete catalog specifies pressure and temperature regulators, float valves, water gauges, float boxes, safety and relief valves, strainers, and similar items. Drawings, layout diagrams, dimensions, and capacity tables are included. Catalog 51 is issued by O. C. Keckley Company, Dept. CP, 400 W. Madison St., Chicago 6, Ill. When inquiring specify CP 4599 on handy form, pages 2 and 3.

Cardboard model demonstrates action of throttling valve

Pulling the stem "opens" the valve on cardboard working model measuring $4\frac{1}{2} \times 8\frac{5}{8}$ ". Model demonstrates internal action of venturi ball throttling valve, reported to give accurate flow control in all positions, easy opening, and dead-tight shutoff. Model is issued by Paul Valve Corporation, Dept. CP, 683 Third Ave., New York 17, N. Y. When inquiring specify CP 4600 on handy form, pages 2 and 3.

Air motor provides power for rotary feed table

Twelve-page, 3-color bulletin describes and illustrates rotary feed table powered by air motor. Table is used to deliver work pieces to machine tools. Contents of bulletin include dimensional drawings and specifications; wiring diagrams; and electrical hook-ups to combine feed table with other pneumatic devices. Bulletin T-80 is issued by The Bellows Co., Dept. CP, 222 W. Market St., Akron 9, Ohio. When inquiring specify CP 4601 on handy form, pages 2 and 3.

Chemical resistance adapts plastics for pipe, tube

Pipe, tube, and suitable fittings made of chemical-resistant plastics are shown in 16-page bulletin. Contents cover physical and chemical properties, dimensions and other specifications, such other forms as rod and sheet, and methods of fabrication. Specific applications are given for each basic plastic. "Ace-Saran and Ace-Parian" is issued by American Hard Rubber Company, Dept. CP, 11 Mercer St., New York 13, N. Y. When inquiring specify CP 4602 on handy form, pages 2 and 3.

Only TRI-CLOVER OFFERS THE COMPLETE LINE



... FOR ALL YOUR CORROSION RESISTANT PIPING NEEDS

STAINLESS STEEL Conical End Fittings... Recessed End Fittings... "Zephyrweld" (Tube O.D. and Schedule V & X IPS Size) welding fittings... Stainless Steel Tubing and Pipe... Valves... Centrifugal Pumps... Pre-Fabricated Specialties... the complete line from one dependable source—**TRI-CLOVER**.

Install Tri-Clover's stainless steel or alloy products in your process lines and realize the advantages of increased production and lower maintenance cost. 32 years of specialized experience in solving corrosion piping problems can be yours by consulting our engineers.

Write for details, or see your nearest Jobber.

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MACHINE CO.
Kenosha, Wisconsin

TRI-ALLOY AND STAINLESS STEEL
SANITARY FITTINGS, VALVES,
PUMPS, TUBING, SPECIALTIES

FABRICATED STAINLESS STEEL
INDUSTRIAL FITTINGS AND
INDUSTRIAL PUMPS

THE Complete LINE

When inquiring check CP 4603 on handy form, pgs. 2-3

PRINCO'S NEW A.S.T.M.

LABORATORY THERMOMETER

SETS

• Nine certified extreme precision laboratory thermometers (ASTM Spec.) cover the interval between -38°C and $+405^{\circ}\text{C}$, (-36° to $+760^{\circ}\text{F}$). Mercury-in-glass with finely divided scales and plush lined carrying case. These new thermometers are offered by PRINCO as part of the complete listing of ASTM spec. thermometers. Special folder on request.

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0260 F

• These "PRECISION SPECIAL" Thermometer Sets have long been used as a laboratory standard. Six thermometers in case cover interval between -60°C or -38°C and $+360^{\circ}\text{C}$ (-76° or -36° to $+680^{\circ}\text{F}$). Write for Bulletin "C".

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1404 Brandywine Street
Philadelphia 30, Penna.
In Canada: Peacock Bros. Limited

When inquiring check CP 4604 on handy form, pgs. 2-3



with a
LIQUIDOMETER
Tank Gauge

- FOR GAUGING LIQUIDS OF ALL KINDS
- 100% AUTOMATIC
- APPROVED BY UNDERWRITERS' LABORATORIES

WRITE FOR COMPLETE DETAILS

THE **LIQUIDOMETER** CORP.
38-18 SKILLMAN AVE., LONG ISLAND CITY, N.Y.

When inquiring check CP 4605 on handy form, pgs. 2-3

NEW LITERATURE

Treating boiler feed water results in zero hardness

Four-page illustrated bulletin tells how to obtain boiler feed water that is low in alkalinity, low in silica, and that has zero hardness. Method recommended: use a 2-stage hot process lime and zeolite softening system. "Latest Developments" is issued by The Permutit Company, Dept. CP, 330 W. 42nd St., New York 18, N. Y. When inquiring specify CP 4606 on handy form, pages 2 and 3.

Covers the general topic of induction motors

Where the large, polyphase induction motor fits into the industrial picture is the topic of 28-page illustrated booklet. These motors are used extensively where a general-purpose drive is required, and where reliability and overall costs are of primary importance.

Booklet presents a summary of types and features of two basic kinds of induction motors — squirrel-cage for constant-speed drives, and wound-rotor for adjustable-speed drives. Both types are available in wide variety of enclosures, which are illustrated. Various features and specializations are discussed, such as unit-type stator, all-metal rotor, split bearings, half brackets, and copper fins.

Applications are illustrated for a number of industries — central station, oil and chemical, paper, steel and metal-working, air conditioning, and mining. Booklet B-4739 is issued by Westinghouse Electric Corporation, Dept. CP, Box 2099, Pittsburgh 30, Pa. When inquiring specify CP 4607 on handy form, pages 2 and 3.

Condensed technical data on stainless steels

Four-page, 2-color bulletin contains condensed data on analyses, oxidation resistance, thermal treatment, and mechanical, electrical, and physical properties of 10 austenitic and ferritic stainless tubing steels. Technical Bulletin 19 is issued by The Babcock & Wilcox Tube Company, Dept. CP, Beaver Falls, Pa. When inquiring specify CP 4608 on handy form, pages 2 and 3.

Engineering section featured in compressor bulletin

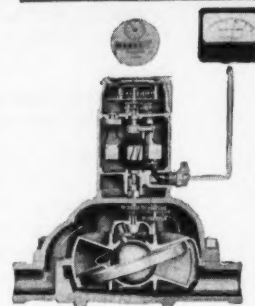
Centrifugal multi-stage compressors are described, illustrated, and specified in 34-page, 3-color bulletin. Useful feature of bulletin is engineering section that permits approximate calculation of power requirements, rotative speeds, and discharge temperatures for most compressor application. Bulletin 116 is issued by Clark Bros. Co., Inc., Dept. CP, Olean, N. Y. When inquiring specify CP 4609 on handy form, pages 2 and 3.

Aqueous hydrochloric acid, hydrogen chloride safety

Twenty-eight-page publication details safety measures to be followed when handling or using aqueous hydrochloric acid and anhydrous hydrogen chloride. Since serious injury can be caused by contact of HCl with the skin and eyes, or by inhalation of vapors, manual places much emphasis on protective clothing, goggles, etc., and on specific first aid and medical treatment.

Included are precautions against fire and explosion; safe

Remote indication and control of liquid flow



Hays VERIFLOW meter accurately measures, indicates, and totals the flow of corrosive and hard-to-meter liquids without using weigh tanks, orifice plates, or gage sticks.

With the Hays VERITROL you simply set a knob at the rate of flow desired . . . then, the VERITROL controls the flow of liquid at that set-rate.

for corrosive liquids

Acetic Acid, Aluminum Potassium Sulphate, Ammonia, Calcium Compounds, Carbolic Acid, Formaldehyde, Fruit and Vegetable Juices, Hydrogen Peroxide, Phosphoric Acid, Potassium Hydroxide, Sodium Compounds, Sulphuric Acid (concentrated), Stearic Acid, and many others

Send for a complete description of Hays Veriflow Meter and Veritrol.
Bulletin 48-766

THE HAYS CORPORATION
MICHIGAN CITY 12, INDIANA

When inquiring check CP 4610 on handy form, pgs. 2-3



**IMMEDIATE
DELIVERY**

on *Pyrex*
**HEAT RESISTANT
SIGHT GLASSES**

Now you can get **Sight Glasses** without delay cut or ground in any shape from PYREX Heat Resistant Polished Plate Glass—for use on ovens, absorption columns, evaporators, stills, pressure vessels—wherever heat resistant glass is desirable.

These heat-resistant **Sight Glasses** resist clouding and pitting, as well as all chemicals except HF and strong, hot caustic solutions. Special cutting and grinding equipment enables Swift to supply **Sight Glasses** in rounds, squares, rectangles, odd shapes in 8 different thicknesses, from $\frac{1}{8}$ " to 1" and in any size that can be made from a 24" x 60" plate. Write, wire, phone for quotations. Bulletin on request.

SWIFT LUBRICATOR CO., INC.

31 West 14th Street • Elmira, New York

When inquiring check CP 4611 on handy form, pgs. 2-3

CHEMICAL PROCESSING

methods for loading and unloading; proper cleaning of containers before re-use; and proper disposal of chemicals as waste. To obtain Chemical Safety Data Sheet SD-39, remit 35c direct to Manufacturing Chemists' Association, Inc., Dept. CP, 246 Woodward Bldg., Washington 5, D.C. When inquiring specify CP 4612 on handy form, pages 2 and 3.

Fingers pump liquids, gases through flexible tubing

Four-page, 2-color bulletin describes positive displacement pump for liquids, solutions, and gases. Action is provided by series of "fingers" that press against flexible tubing in sequence and impart positive unidirectional movement of material. Since material does not come in contact with pump parts, no contamination results, and no pump cleaning is necessary when changing materials. Pump can handle more than one fluid at the same time without mixing them.

Cycle of the cam-operated fingers is timed so that tubing is always tightly closed at some position, eliminating need for valves. With proper selection of tubing, vacuums of 28" Hg and pressures to 25 psi are possible. Wide range of flow rates is available without speed changes; flow depends largely on tubing size. Further details and application photos are contained in "Sigmamotor", issued by E and M Enterprises, Inc., Dept. CP, Middleport, N. Y. When inquiring specify CP 4613 on handy form, pages 2 and 3.

One-half inch of resurfacer hardens concrete floors

Resurfacer described in 4-page bulletin is used over concrete floors to protect them from disintegration by water, oils, greases, and acids. Material is applied to thicknesses of not less than 1/2" and requires only the addition of water to prepare. Resultant floor is "flint-hard". "Stonpach" is issued by Stonhard Company, Dept. CP, 500 Stonhard Bldg., 1306 Spring Garden St., Philadelphia 23, Pa. When inquiring specify CP 4614 on handy form, pages 2 and 3.

Book covers practical aspects of electroplating process

Containing 250 pages, electroplating book is slanted at those who encounter electroplating problems from time to time in their work — that is, it is not designed for those primarily concerned with electroplating. All important aspects of practical plating are discussed without going into the involved details of electrochemical theory. Necessary fundamentals (bath voltage, polarization, current distribution, etc.) are handled in non-technical language.

Characteristics of plating baths, the behavior of current during plating, the deposit, the composition of common plating baths, control methods, and analytical procedures are well covered. Special chapters are devoted to alloy plating, continuous plating, diffusion coatings, copper plating for selective carburization, and commercial applications. Causes and cures for the most frequently encountered plating troubles are in a separate section.

To obtain "Electroplating", written by Mohler and Sedusky, remit \$5 direct to Chemical Publishing Co., Inc., Dept. CP, 212 Fifth Ave., New York 10, N. Y. When inquiring specify CP 4615 on handy form, pages 2 and 3.

MAY, 1951

The Inside Story of Longer-Lasting Laboratory Electric Furnaces...



...FEATURING NORTON ALUNDUM* REFRACTORIES

Whether your laboratory furnaces are of the pot, muffle or tube variety, for chemical analysis, physical testing or metallurgical research, they will function more efficiently and last much longer when built with Norton Alundum cores, muffles or tubes.

4 REASONS WHY

1. Norton Alundum electric furnace parts are made from fused aluminum oxide that is 99% Al_2O_3 .
2. Such purity results in a high degree of stability and chemical inertness that prevents reactions with either resistor materials or platinum, nickel, and fused oxide crucibles and boats at high temperatures.
3. Norton Alundum furnace shapes are excellent thermal conductors, thus assuring small temperature gradient between the resistor and the furnace interior.
4. Norton Alundum refractory is a good electrical insulator up to relatively high temperatures. One test on an Alundum tube shows a direct current resistance of 7.5×10^7 ohms/cm² at 600° C. This value did not fall off materially until a temperature in excess of 1600° C was reached.

WHAT ABOUT SILICON CARBIDE?

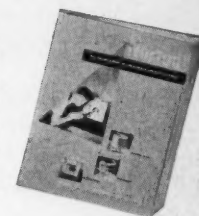
Norton Crystolon* refractory muffles, made of bonded silicon carbide, have a thermal conductivity several times that of Alundum refractory. However, at high temperatures, Crystolon refractory not only is an electrical conductor but also reacts chemically with some resistors. For these reasons, its use is limited to nickel chromium alloy resistor materials and to temperatures not exceeding 1150° C.

FOR THE WHOLE STORY about Norton Alundum refractories' vital part in improving laboratory electric fur-

naces, write for FORM 458, titled, "The Construction of Electric Furnaces for the Laboratory."

NORTON COMPANY
566 New Bond St., Worcester 6, Mass.

NEW 24-PAGE BULLETIN tells you all you need to know about building electric furnaces for laboratory use.



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Making better products to make other products better

Special REFRACTORIES

Canadian Representative
A. P. GREEN FIRE BRICK CO., Ltd. TORONTO, ONTARIO

When inquiring check CP 4616 on handy form, pgs. 2-3

TOUGH JOB FILTER CLOTHS

New Available

ORLON*

(An acrylic fiber)

Good resistance to hot mineral acids, weak alkalis, common solvents, oils, greases, neutral salts, acid salts and chlorine.

No loss of strength after 32 days exposure to air at 257°F. Negligible shrinkage.

VINYON N**

Excellent resistance to strong acids such as sulphuric, nitric, hydrochloric, hydrofluoric and aqua regia. Also to sodium and potassium hydroxide; chlorine and bromine water, silver nitrate, tannic acid and many oils, fats and waxes.

Boiling solutions are readily withstood by these versatile media.

SARAN

Exceptional resistance to acids, particularly hydrochloric, and to alkalis except ammonium hydroxide. Unaffected by alcohols or aliphatic hydrocarbons. Continuous exposure up to 160°F. and intermittent exposure up to 212°F. do not appreciably affect tensile strength.

GLASS

Woven from highly resistant, durable chemical glass. Usable where such glass itself is usable.

These cloths are available in several weaves and in standard widths ranging from 26" through 72" or made up into filter element covers. These cloths are all woven in our own mill by operators having long experience in the art of glass fabric weaving.

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2627 West 19th St. Roselawn Center Bldg. 1406 Second National Bank Bldg. Nicolai Friis Edward L. Bateman

When inquiring check CP 4617 on handy form, pgs. 2-3

NEW LITERATURE

Describes air cleaner non-technically

Eight-page leaflet describes air cleaner in non-technical terms. Operation, construction, and selection data are also covered. Leaflet SA-6691 is issued by Westinghouse Electric Corporation, Sturtevant Div., Dept. CP, 200 Readville St., Hyde Park, Boston 36, Mass. When inquiring specify CP 4618 on handy form, pages 2 & 3.

Presents many varieties of heaters, controls

Twenty-four-page bulletin completely describes line of strip, immersion, cartridge, vane, gooseneck, and space heaters; lead and babbitt melting pots; and suitable thermostats and switches. Contents also include tables of specific heats, conversion factors, and a discussion of heating formulas.

Extensive illustrations include pictures, engineering drawings, and graphs. Bulletin 74-TA is issued by Trent, Inc., Dept. CP, 235 Leverington Ave., Philadelphia 27, Pa. When inquiring specify CP 4619 on handy form, pages 2 and 3.

Simple pictures on poster show belt maintenance

Large poster chart uses simple pictures and text to show 14 steps in the care, maintenance, and treatment of power-driven belts. "How to Care For and Maintain Your Belts" is issued by Cling-Surface Co., Dept. CP, 1032 Niagara St., Buffalo 13, N. Y. When inquiring specify CP 4620 on handy form, pages 2 and 3.

Catalog contains 100 pages of packings and gaskets

Showing various packings and gaskets, 100-page catalog is loose-leaf style with leatherette cover. Contents include specifications for products; recommendation charts; and engineering data. Packings and gaskets catalog is issued by Raybestos-Manhattan, Inc., Packing Div., Dept. CP, Manheim, Pa. When inquiring specify CP 4621 on handy form, pages 2 and 3.

Any grade of fuel oil used in kiln burner

Two-page catalog gives details on long-nose type of low pressure, air atomizing oil burners. Units are chiefly used on horizontal rotary kilns where burner nozzle must extend into the furnace for some distance.

Where such kilns are operated at

EXTRA Hand Protection at Lower Cost

PIONEER STANZOILS

Straight or curved finger styles

Non-slip fingers and palm—grip wet oily things as if dry

DuPont milled neoprene—long lasting, resistant to oils, acids, liquids

Greater tensile strength—greater tear resistance

N-51

Increase working efficiency and workers' hand comfort with PIONEER Stanzoils—for greater production, fewer injury claims. Stanzoils are made of milled neoprene exclusively—assures unequalled tensile strength, tear resistance. Their non-slip grip and efficient fit give workers new assurance and speed. Complete line of styles, sizes, weights, and colors. Write today for complete catalog.

Synthetic Rubber Division

The PIONEER Rubber Company
641 Tiffin Road, Willard, Ohio • Los Angeles

OVER 30 Years OF QUALITY GLOVE MAKING

When inquiring check CP 4622 on handy form, pgs. 2-3

LEE
Corrosion-Resistant
HEAVY DUTY
Kettles

Lee Kettles are available in standard and special designs in capacities up to 500 gallons. They are easy to clean and keep clean, meet all sanitary regulations and are built to conform with the A.S.M.E. Code. Hydraulic operating cylinders are available with all tilting kettles and tilting agitators for safe pouring and cleaning.

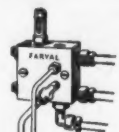
May we send you our descriptive technical bulletins?

LEE Metal Products Company, Inc.
418 PINE ST. PHILIPSBURG, PA.

When inquiring check CP 4623 on handy form, pgs. 2-3

New Farval Spray Valve

METERS LUBRICANTS TO SLIDE SURFACES AND OPEN GEARING



By an ingenious adaptation of the familiar Farval Dualine Valve, either grease or oil is sprayed through a nozzle—onto any desired area, in any amount, at any interval.

The new Farval Spray Valve can be added to a regular Farval Dualine Lubrication System wherever compressed air is available—or a complete system of spray valves may be installed, served by either manual or automatic pumping unit.

Farval Spray Valves have been thoroughly tested in service on a wide variety of machines and equipment, supplying lubricant efficiently, economically and safely to open gearing, slide surfaces and other areas where Farval closed systems are not readily adaptable.

For full description with diagrams, get Farval Bulletin No. 60. The Farval Corporation, 3257 East 80th Street, Cleveland 4, Ohio.

Write for this
FREE bulletin



When inquiring check CP 4624 on handy form, pgs. 2-3

NEW LITERATURE

sufficiently high temps to maintain flame stability, burner operates without refractory burner block or ignition tile. Resulting flame length will be longer than possible on standard burners with ignition tile.

Burners use any grade of fuel oil. Other specifications—dimensions, etc.—are contained in Catalog 412, issued by Hauck Manufacturing Company, Dept. CP. 124-136 Tenth Ave., Brooklyn 15, N. Y. When inquiring specify CP 4626 on handy form, pages 2 and 3.

Shows case histories of dust control

Periodical devoted to industrial dust and fume control contains illustrated case histories on the application of cloth-tube filters to dust control problems in various industries.

Of special interest is the informative technical discussion on collecting efficiencies of these filters. "Industrial Ventilation" is issued by American Wheelabrator & Equipment Corp., Dept. CP, 555 S. Byrkit St., Mishawaka, Ind. When inquiring specify CP 4627 on handy form, pages 2 & 3.

Pressure treating system preserves wood, lumber

Twelve-page, 2-color booklet traces history of copper-arsenate wood preservative, gives figures on treatment efficiency, and indicates applications for treated products. Treatment is pressure type, is mainly used on ties, poles, and general lumber to give protection from rot, decay, and termites.

"Chemonite" is issued by J. H. Baxter & Co., Dept. CP, 200 Bush St., San Francisco 4, Calif. When inquiring specify CP 4628 on handy form, pages 2 and 3.

Gives salient properties of tubing steels

Six-page bulletin tabulates such information as analyses, physical and mechanical properties, creep strength, short time elevated temperature tensile strength, and oxidation resistance for series of 14 steels available in tube form.

Represented are carbon, intermediate chrome molybdenum, and stainless steels. Technical Bulletin 12F is issued by The Babcock & Wilcox Tube Company, Dept. CP, Beaver Falls, Pa. When inquiring specify CP 4629 on handy form, pages 2 and 3.

Fast-Flo

TRANSFER PUMP

for speedy transfer of fluids and semi-fluids

High Volume

Empties full-size drum in only 3 minutes

Graco's new transfer pump, the *Fast-Flo*, delivers 18 GPM of No. 20 oil at 150 lbs. air pressure. Empties a full-size drum in only three minutes. Saves valuable time transferring paints, thinners, naphthas, lubricants, coolants, alcohols, adhesives, non-corrosive chemicals and many other materials. Eliminates spillage.

Lightweight

No more struggling with hard-to-handle equipment

Exceptionally light and easy to handle. Graco *Fast-Flo* weighs only 15 pounds, yet performs a man-size transfer job every time.

Durable

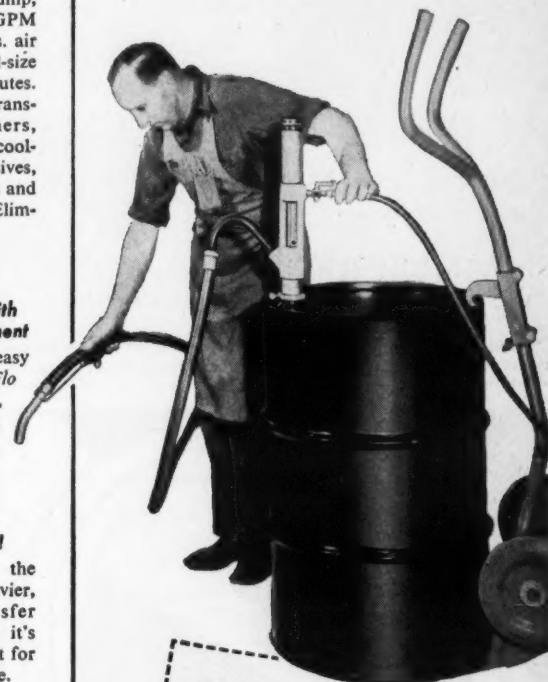
Built for rugged duty; handles the tough jobs!

Graco *Fast-Flo* takes the tough jobs just like heavier, more expensive transfer pumps do. Although it's small and light, it's built for rugged duty and long life.

Low Price

***Fast-Flo* costs several times less than other transfer pumps of similar volume.**

Handling ease... unusually high operating speed... durability... plus a real bargain price! You get all these when you use a Graco *Fast-Flo* Transfer Pump. Order a *Fast-Flo* today.



GRAY COMPANY INC.

53 Graco Square, Minneapolis, Minn.

● Please send me free literature on the Graco *Fast-Flo* Transfer Pump.

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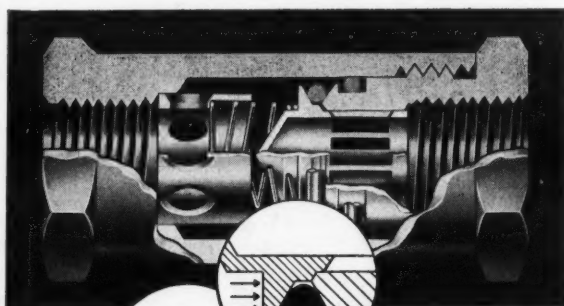
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GRACO

Fast-Flo TRANSFER PUMP

DISTRICT OFFICES IN NEW YORK, PHILADELPHIA, CHICAGO, DETROIT, SAN FRANCISCO

When inquiring check CP 4630 on handy form, pgs. 2-3



The **CIRCLE SEAL** principle

insures

ABSOLUTELY LEAKPROOF performance
unequalled in any CHECK VALVE

Circle Seal Check Valves provide positive, bubble-tight sealing in any mounting position. The resilient "O" Ring cushions the closing shock—seals to eliminate back flow or leakage.

Pressures: 0 to 3000 psi
Temperatures: -65°F to 280°F
Sizes: 1/8" to 1"

CIRCLE SEAL
JAMES-POND-CLARK
1247 East Green Street
Pasadena 1, Calif.

precision check valves

Engineering data sent
free of charge
on request.

When inquiring check CP 4625 on handy form, pgs. 2-3

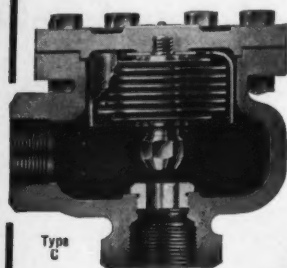
Nicholson Steam Traps

CUT HEAT-UP TIME 48%

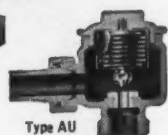
A large processor recently reduced the heating cycles of cookers from 1 3/4 hrs. to 50-60 min., by substituting Nicholson thermostatic steam traps for a mechanical type. This effected a gratifying production increase of 37%.

Reasons for Nicholson's faster heat transfer: operate on lowest temperature differential; 2 to 6 times average drainage capacity; maximum air venting.

5 TYPES FOR EVERY APPLICATION, process, heat, power. Sizes, 1/4" to 2"; press. to 225 lbs.



Type C



Type AU

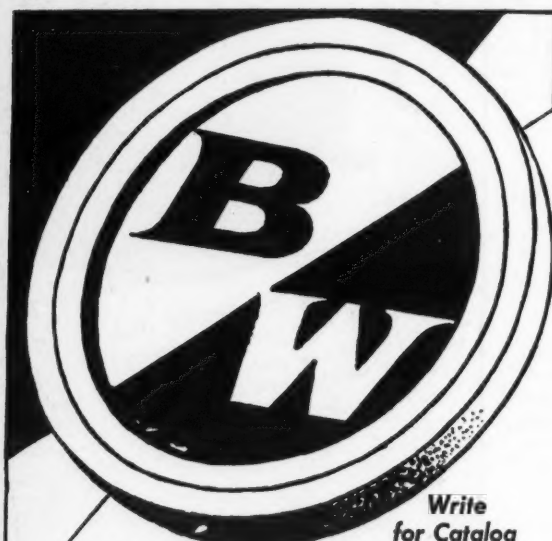


Type AHV

BULLETIN 450
or see Sweet's

W. H. NICHOLSON & CO. 181 OREGON ST.
WILKES-BARRE, PA.
Sales and Engineering Offices in 53 Principal Cities

When inquiring check CP 4631 on handy form, pgs. 2-3



Write
for Catalog

Floatless ALL ELECTRIC LIQUID LEVEL CONTROLS

FIRST and FOREMOST
IN THE FLOATLESS
CONTROL FIELD

B/W CONTROLLER CORPORATION

2204 E. Maple Road
Birmingham, Mich.

When inquiring check CP 4632 on handy form, pgs. 2-3

NEW LITERATURE

Cation exchange principle used in hydrogen zeolite softeners

Sixteen-page publication gives complete description of the process and field of application for hydrogen zeolite (cation exchange) water softeners. Publication 4530 is issued by Cochran Corporation, Dept. CP, 17th St. and Allegheny Ave., Philadelphia 32, Pa. When inquiring specify CP 4633 on handy form, pages 2 and 3.

Details dry-seal tanks for storing gases

Twelve-page bulletin describes and pictures dry-seal tanks used for storing hydrogen, nitrogen, blue gas, carbon monoxide, carbon dioxide, oxygen, coke oven gas, tetrafluoroethylene, and sewage digester gas. Dry seal consists of strong fabric core of woven asbestos impregnated and coated with diffusion-resistant synthetic rubber. Seal is flexible, impervious to rot and weathering, highly impermeable to gas or vapor, about 35 times as strong as is needed for normal operation, and useful over temperature range of -40 to 180°F.

Operating principle of tank is that of a piston displacement mechanism. Frictionless movable piston floats on the confined gas, rising and falling with changes in volume of this gas. Annular space between piston and shell is completely sealed by fabric rather than tar or grease. Dead space between seal and shell represents less than 1/2% of total storage capacity.

As gas enters empty tank, the piston rises from tank bottom and floats on the gas. As more gas enters, piston continues to rise until its fender contacts girder of outer telescoping fender. From this position to full position, fender rises as a unit with piston. Fender serves as backing or abutment surface for seal. As piston and fender rise, seal rolls off fender and onto shell without abrasion. Seals are available in different materials to meet specific requirements.

Bulletin stresses that present tanks can be converted to dry-seal principle, and that the water tank can then be used for working storage. Capacity is thus increased by 10 to 15%. Bulletin WG-22 is issued by General American Transportation Corporation, Dept. CP, 135 S. LaSalle St., Chicago 90, Ill. When inquiring specify CP 4634 on handy form, pages 2 and 3.

Details refractories, refractory cements

Special refractories and refractory cements are described and specified in 4-page Bulletin B-749, issued by Electro Refractories & Alloys Corporation, Dept. CP, 344 Delaware Ave., Buffalo 2, N. Y. When inquiring specify CP 4635 on handy form, pages 2 and 3.

Authoritative reviews cover medicinal chemistry

Series of reviews compiled in 473-page book summarizes available data on biological properties of medicinal substances and correlates the relationship between chemical structure and physiological activity in each area covered.

Each chapter is a self-sufficient unit, supplying information about one type of medicinal compound. Each lists all compounds that have been tested for the type of pharmacological activity covered in that chapter. Each examines the relationship between chemical structure and pharma-



Just as Viking means rugged warriors, so does Viking stand for rotary pumps that are rugged. Designed and built for service, Viking pumps have proved dependable and long-wearing.

Note the simple "gear-within-a-gear" construction, with only two rugged moving parts and no small, intricate pieces to wear and get out of adjustment. You'll then know why Vikings are so famous for long, dependable service.



For information on Viking pumps, write today for free Bulletin 51SCC.

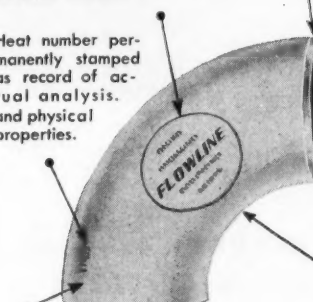
Viking PUMP COMPANY
Cedar Falls, Iowa

When inquiring check CP 4636 on handy form, pgs. 2-3

Smooth Interior Surface Assures FREE FLOW

Trade mark, type of material, size, schedule, wall thickness marked.

Heat number permanently stamped as record of actual analysis and physical properties.



Machine tool cut and beveled.

Formed cold by exclusive Welding Fittings process.

Smooth interior—no die marks, or ridges—minimizes possibility of corrosion, product accumulation or pressure drop.

Annealed, cleaned bright and passivated.

Long radius, (1 1/2 times diameter.)

Full wall thickness throughout.

FLOWLINE stainless welding ells, reducers, tees, stub ends, and caps are available in sizes from 1/2" through 12". 2846 stock items—see Bulletin S-310.



When inquiring check CP 4637 on handy form, pgs. 2-3

CHEMICAL PROCESSING

NEW LITERATURE

cological action and includes references to groups of compounds, particularly in the patent literature, even if supporting data has not been published. Each discusses methods of synthesis and test procedures for the compounds covered; and each gives selected references to pertinent articles in scientific journals and patent literature.

To obtain "Medicinal Chemistry", Volume I, remit \$12 direct to John Wiley & Sons, Inc., Dept. CP, 440 Fourth Ave., New York 16, N. Y. When inquiring specify CP 4638 on handy form, pages 2 and 3.

General information featured in caster catalog

Although primarily listing and specifying complete line of casters and wheels for industrial trucks, 41-page catalog features much general information — factory symbols, selection data, load ratings, definitions, and accessories. Items are available in wide range of styles and sizes. Catalog 25 is issued by Divine Brothers Company, Dept. CP, 200 Seward Ave., Utica 1, N. Y. When inquiring specify CP 4639 on handy form, pages 2 and 3.

Details of pump construction explained in illustrations

Line of single stage, split case centrifugal pumps is covered in 8-page, 3-color bulletin. All pumps are furnished for direct connection to electric motors, steam turbines, and gasoline engines; or with belt drive from any source of power. Capacities range from 25 to 4000 gpm with total heads from 20 to 300 feet.

Detailed specifications and illustrations of important elements of construction give a complete understanding of these pumps. Performance table simplifies selection of individual units to meet specific requirements for capacity and head. Bulletin 5004-A is issued by The Deming Company, Dept. CP, Salem, Ohio. When inquiring specify CP 4640 on handy form, pages 2 and 3.

Comprehensive catalog details material handling equipment

Subjects covered in 44-page material handling equipment catalog include hand and electric hoists; fork trucks; lift trucks; platform trucks; pallet trucks; and various types of scales. Series of fork truck accessories that extend truck applications is also presented. Items are briefly described, but excellently illustrated — largest part of catalog consists of numerous application photographs showing equipment at work in specific industries.

"Materials Handling Equipment" is issued by Yale & Towne Manufacturing Company, Philadelphia Div., Dept. CP, 11,000 Roosevelt Blvd., Philadelphia 15, Pa. When inquiring specify CP 4641 on handy form, pages 2 and 3.

Valves, cocks, unions, joints specified in price list

Information on sizes and materials of construction is given in 8-page valve price list. Line presented includes bronze valves and cocks, iron valves and cocks, iron and brass unions, expansion joints, and swing joints. Price list is issued by Jarecki Valve Div., H. K. Porter Company, Inc., Dept. CP, Drawer 2650, Tulsa, Okla. When inquiring specify CP 4642 on handy form, pages 2 and 3.

MAY, 1951

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production
up with**

**PYREX brand
"DOUBLE TOUGH"
GLASS PIPE**

If you're having trouble maintaining production schedules for lack of corrosion resistant piping, here's your solution—PYREX brand "Double-Tough" Glass Pipe. Low in initial cost and maintenance, PYREX brand Glass Pipe has proved to be a practical plant material for 25 years. For numerous processing applications its superiority to other types of corrosion resistant material has been outstanding. And your Authorized Distributor has balanced stocks on hand to meet your needs now without delays or tie-ups.

Whether your transfer problem involves liquids or gases, highly corrosive materials or liquids sensitive to contamination, PYREX pipe is the answer. It is not only highly resistant to corrosion, its chemical stability prevents product contamination. And you can check flow, crystallization or sedimentation visually.

Made from heavy-wall machine drawn tubing,



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When inquiring check CP 4643 on handy form, pgs. 2-3



PYREX brand "Double-Tough" Glass Pipe is now stronger than ever. A new heat treating process doubles the strength of the ends of straight lengths and all standard fittings (except U-bends). High resistance to physical and thermal shock is assured. Your Corning Distributor stocks the pipe and fittings you need. Call him today, or send the coupon below for complete information.

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Scientific Supplies
Seattle 4, Washington
Stemmerich Supply Company
St. Louis 2, Missouri

Mooney Bros. Corp.
Lodi, New Jersey

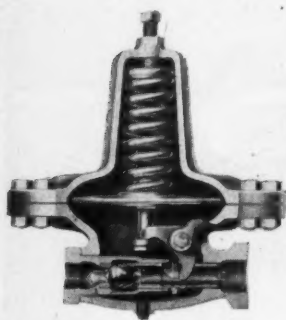
CORNING GLASS WORKS, Dept. CP-5, Corning, N.Y.
Please send me your new Pyrex Brand "DOUBLE-TOUGH" Glass Pipe Catalog.

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COMPANY _____
ADDRESS _____
CITY _____ ZONE _____ STATE _____

**THERE'S NO PLACE
FOR THESE TROUBLEMAKERS . .**



"We use your Streamlined '1000' Valves on the following equipment:



Heating Systems
Solution Heaters
Plating Tanks
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"We use them:

1. because they hold close delivery pressure control.
2. they don't get gummed up, so we get more and better production with very little lost time.
3. maintenance cost is very low—the guts are cheap—old parts come out and new parts go in easily with little time lost."

CASH STANDARD TYPE 1000
Streamlined
PRESSURE
REDUCING VALVE

ITS ASPIRATOR AND
STREAMLINED FLOW WORK TO YOUR
BENEFIT IN THESE 12 WAYS . .

Maximum Capacity When Needed Most • Accurate Pressure Control Under Toughest Working Conditions • Trouble-Free Service •

CASH STANDARD
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VALVES

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Accurate Regulation • Speedier Production Results • Elimination of Failures • Constant Delivery Pressure
Cost Saving Operation • No Spoilage
Practically Zero in Maintenance Costs

A. W. CASH COMPANY
DECATUR, ILLINOIS

When inquiring check CP 4644 on handy form, pgs. 2-3

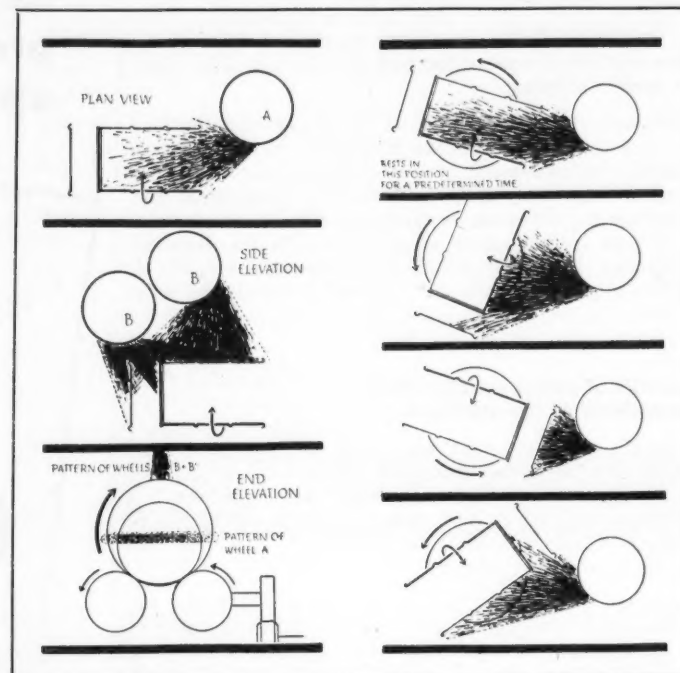
*Processing
Equipment*

Cleaning Drums to Bare Metal for Re-use Now Automatic Operation

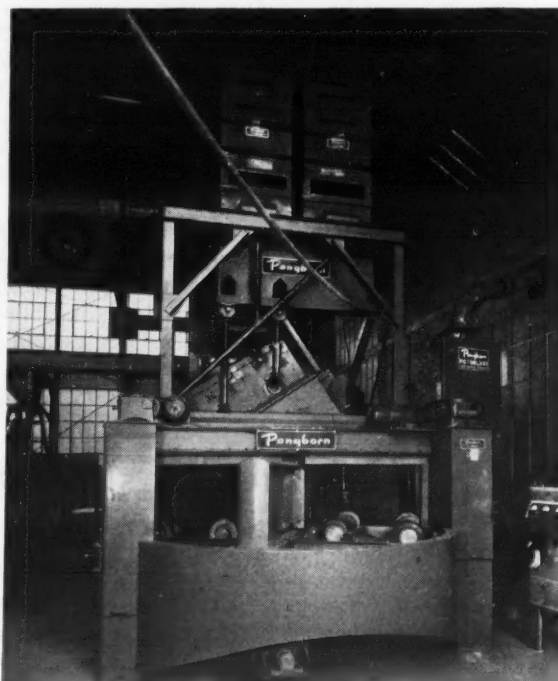
Metal abrasive hurled against interiors and exteriors leaves surfaces ready for immediate painting

USES: For removal of dirt, rust, paint, and other foreign materials — down to bare metal — from 30 and 55-gallon returnable steel drums and their lids before re-use. Model ES-400 cleans 1000 to 1100 drums and drum heads per day (125 to 140 per hour); Model ES-382 cleans 320 to 560 drums and covers per day (40 to 70 per hour).

Features: Metal abrasive hurled against both the interior and exterior surfaces of the drum by centrifugal force provides the cleaning action. This action leaves no chemicals



(Left) Drum cleaning action in Model ES-400 drum cleaning machine; (right) action in Model ES-382



Model ES-400 cleans up to 140 metal drums per hour

or alkalis to wash off, thus providing a clean bonding surface for repainting. Drums are automatically handled during the cleaning operation; merely one man is required to load and unload them.

Cleaning operation takes 50 to 90 seconds, depending upon the nature of the material to be removed, and the facility with which the operator loads and unloads the drums.

Description: Both models of the "Rotoblast" machine clean on the same principle — vaned wheels rotating at 2300 rpm throw the abrasive grains against the drum surfaces. Spent abrasive, mixed with the material it has scoured from the drum, is cleaned by a separator and returned for re-use. Automatic shut-off valves prevent any flow of abrasive when partitions or doors of the machine are open, thus preventing possibility of accident. Working conditions for the operator are reported to be sanitary.

Drums are handled differently by the two models during the cleaning operation. The larger capacity, Model ES-400, consists of a table divided by a partition, on either side of which are holders for drums to be cleaned. While one drum is being cleaned in the cabinet, the other is exposed for unloading the cleaned drum and loading the next drum to be cleaned.

In the smaller machine, Model ES-382, a cabinet houses table and rollers. Operator places a drum on the table and its cover on rollers. Cabinet door is closed and the

machine started; cleaning proceeds automatically while the operator brings up the next drum for cleaning.

SPECIFICATIONS

| | Model ES-400 | Model ES-382 |
|-------------------|-----------------|--------------|
| Height | 23' 5" | 14' 6" |
| Floor Space | 13' 3" x 20' 6" | 11' x 17' 3" |
| Abrasive Flow | 68,000 lb/hr | 28,000 lb/hr |
| Cleaning Capacity | 120-140/hr | 40-70/hr |
| Weight | 25,000 lb | 20,000 lb |

Source: Rotoblast drum cleaning machines are a development of the Pangborn Corporation, Dept. CP, Hagerstown, Md. . . or for more information check CP 4645 on handy form, pages 2 and 3.

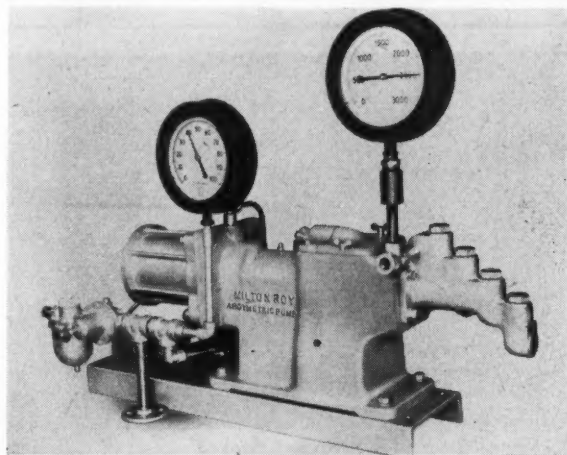
Principal application of pump is hydrostatic testing . . .

balances air input pressure against wanted hydraulic pressure to achieve flexibility, simplicity, safety

Uses: Pump basically designed for hydrostatic testing of boilers, forgings, castings, tubing, pipes and piping systems, pressure gages, valves, vacuum pumps, dryers, high pressure hose, and similar equipment. Other applications include filling refrigerants and liquefied gases into bottles or containers, and serving as booster pump for maintaining required pressures in hydraulic systems.

Features: When balance is reached between air pressure and corresponding hydrostatic test pressure, pump automatically stops. This technique of balancing air input pressure against desired hydraulic pressure gives pump extreme flexibility, simplicity, and safety.

Description: Unit develops test pressures up to 25,000 psi, using ordinary plant air supply in the pump cylinder. Each pump develops discharge pressure ratio range of at



Major use is in hydrostatic testing applications

least 6 to 1, permitting single pump use for applications requiring various test pressures. Individual units may be custom made for specific applications between 25 and 25,000 psi.

Pump is self-reciprocating, and in operation pumps continuously and automatically at maximum capacity in building up the desired pressure in the system; this eliminates the constant attendance of an operator. Ordinary city water, or oil from a supply tank, flowing through the pump permits rapid filling of large capacity vessels. Double-ball check liquid ends are non-clogging and self-cleaning.

Source: Pressure generators are made by Milton Roy Company, Dept. CP, 1302 E. Mermaid Lane, Philadelphia 18, Pa. . . or for more information check CP 4646 on handy form, pages 2 and 3.

MAY, 1951

REVERE COPPER TUBE of Special Bending Temper . . .



. . . saves bending time, enables WESTERN BLOWER CO. to produce neater, more uniform tube bundles.

During the past nine years, Western Blower Co., of Seattle, Wash., has used hundreds of thousands of feet of $\frac{5}{8}$ " and 1" O.D. Revere Seamless Copper Tube of special bending temper, with .049" wall.

They tell us that in working with this Revere Tube they are able to make large and small radius bends without the slightest difficulty and without heat treating, excepting the smallest 1" radius. This not only saves bending time but, enables them to turn out a better appearing tube bundle . . . an important item with Western Blower as many of their bundles are sold without tanks.

In addition to the above, this company has also used tens of thousands of feet of Revere Cupro-Nickel Tube in heaters where salt water was a problem. For this metal, which is one of the most corrosion-resistant of the copper nickel alloys, can withstand high operating temperatures and is not subject to dezincification.

Have you investigated the Revere metals to see how they might help you with your tube problems? Why not have Revere put the knowledge and experience, gained through years of helping others, to work for you? Call the nearest Revere office today.

REVERE 150TH YEAR OF SERVICE TO AMERICA
COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801

230 Park Avenue, New York 17, N. Y.

Mills: Baltimore, Md.; Chicago and Clinton, Ill.; Detroit, Mich.; Los Angeles and Riverside, Calif.; New Bedford, Mass.; Rome, N. Y.—
Sales Offices in Principal Cities, Distributors Everywhere.

SEE "MEET THE PRESS" ON NBC TELEVISION EVERY SUNDAY



EXPANDING THE TUBE ENDS outside the header of one of the U-bend heat exchangers being turned out by the WESTERN BLOWER CO. Revere products have been used exclusively by this company for many years.



FLARING THE TUBE ENDS over the header. These coils, made of Revere Seamless Copper Tube, of Special Bending Temper, are used in tanks for domestic hot water, in side arm heaters, condensate coolers and converters.

When inquiring check CP 4647 on handy form, pgs. 2-3

For New **ECONOMY** in Laboratory Apparatus
lower cost, more volume—

Specify *** Precision** to be Sure



PRECISION-THELCO Cabinet Line saves considerably on low original cost and long service. Quick, thorough controlled-temperature; larger interior; welded construction; safety catch; non-char asbestos door-seal; baked enamel finish; selection to suit every purpose. Ideal for the limited budget. Bulletin 8-376

To make your work easier, surer, more economical, replace or implement your present facilities with selections from some 3,000 Precision products. "Utility" items as well as highly specialized instruments are built beyond duty requirements.

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NEW YORK • PHILADELPHIA • ST. LOUIS • HOUSTON • SAN FRANCISCO

When inquiring check CP 4648 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

Spillage cut during liquid transfer . . .

tilter for 5-gal cans simplifies filling of smaller containers

Uses: Pouring liquids from any standard 5-gal can into smaller containers. Handy method of mixing.

Features: Minimizes accidents caused by spilling, splashing and carelessness in pouring liquids.

Description: Cradle is made of



Tilter simplifies liquid transfer

steel. All members are riveted or welded. Name: Easy-pour tilter #15.

Source: General Scientific Equipment Co., Dept. CP, 2700 W. Huntingdon St., Philadelphia 32, Pa. . . or for more information check CP 4649 on handy form, pages 2 and 3.

Carbon ring of rotating joint promotes low turning torque . . .

ball surface of ring eliminates breakage from shock

Uses: On applications that require rotating syphons, as well as the standard applications where condensate is removed through the same end of the roll into which steam is introduced. Joint is for temperature range from minus 65 up to 500 degrees. Sizes, 1/2 to 5 inches.

Features: Rotation takes place on flat carbon ring having very low friction. This ring has a ball surface that corrects weaving of the roll due to eccentricity. This surface also eliminates breakage of carbon ring because shock has a tendency to compress the carbon rather than pull it apart.

Description: New design of Rotherm revolving joint is entirely



End
These Common Float Failures

- Corrosion
- Lack of Buoyancy
- Collapsing
- High Replacement Cost
- High Temperature Failure

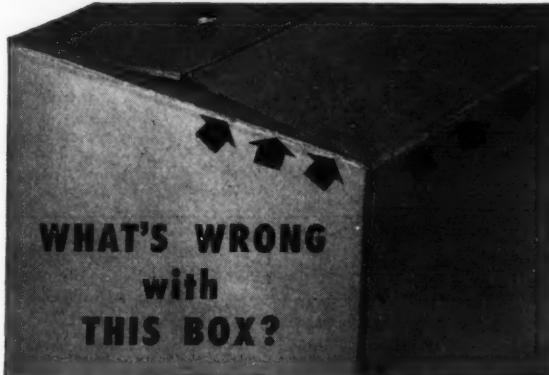
Use STAINLESS STEEL FLOATS

Standardize on Stainless Steel for all your float requirements. You'll find that the long, trouble-free service you get will literally put an end to your float maintenance problems. Costly dismantling of equipment to get at faulty floats is practically eliminated because Stainless Steel Floats from Chicago Float Works will function efficiently for many years, often for the life of the equipment in which they are installed. At Chicago Float Works you get the advantage of a complete line of standard sizes, shapes, and spud connections to choose from. Pressures to 1000 lbs.; temperatures to 800° F. Also special floats made to order. Monel and Nickel floats available for special applications.

SEND FOR COMPLETE CATALOG TODAY

CHICAGO FLOAT WORKS, INC.
2340 S. Western Ave., Chicago 8, Illinois

When inquiring check CP 4650 on handy form, pgs. 2-3



WHAT'S WRONG with THIS BOX?

IT has dry air-itis . . . dried out, cracked at the creases, strength reduced. It's no longer a suitable shipping container. Low wintertime humidities are hard on all of your paper boxes and packaging materials.

Moreover, dry air causes warping, wavy stock, off-register printing and scoring troubles.

Automatically controlled humidification with economical Armstrong Steam Humidifiers prevents all this simply by adding steam directly to the air. They often repay their cost in one heating season. Available from stock, ready for easy installation. Write today.

SEND FOR BULLETIN 1772

Complete information includes illustrations, diagrams, data, prices, etc. Write:

ARMSTRONG MACHINE WORKS
880 Maple Street • Three Rivers, Michigan

When inquiring check CP 4651 on handy form, pgs. 2-3

CHEMICAL PROCESSING



ACME . the Only Gas Mask With the "PICTURE WINDOWS"

You never have that "jammed-in" feeling, wearing the Acme Full-Vision Gas Mask. Its patented, larger lenses are like picture windows, giving you full natural vision for that safe, unconfined feeling. When you walk, you can actually see your toes without bobbing your head. This factor alone makes Acme outstanding among gas masks . . . well worth looking into.

Write for the complete story on Acme Gas Masks for the chemical industry.

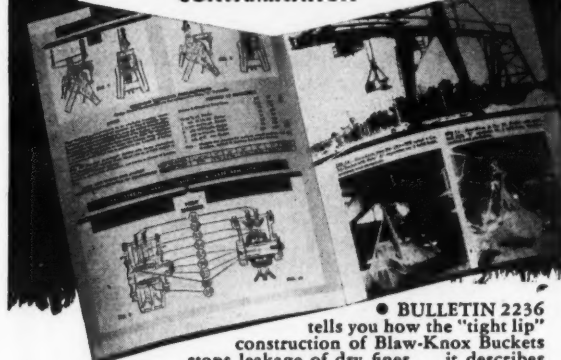
ACME PROTECTION EQUIPMENT CO.

3037 West Lake Street, Chicago 12, Illinois

When inquiring check CP 4652 on handy form, pgs. 2-3

Your Copy is Ready

TO HELP YOU HANDLE
GRANULAR MATERIALS WITHOUT
CONTAMINATION



• BULLETIN 2236 tells you how the "tight lip" construction of Blaw-Knox Buckets stops leakage of dry fines . . . it describes how the sealed anti-friction lever arm sheave bearings prolong bucket life and increase operating efficiency . . . it illustrates the many other important Blaw-Knox features that can help cut handling costs in your plant.

Write For Bulletin 2236 Today!
BLAW-KNOX DIVISION
of Blaw-Knox Company
2076 Farmers Bank Building
Pittsburgh 22, Pa.

BLAW-KNOX

FOR CHEMICAL AND
FERTILIZER PLANTS

CLAMSHELL BUCKETS

When inquiring check CP 4653 on handy form, pgs. 2-3

MAY, 1951

PROCESSING EQUIPMENT

self-contained. Gland inside casing is sealed from leakage around the back by a Teflon wedge ring as well as a piston ring. This permits gland to take care of expansion by floating. The carbon ring is easily removed without taking joint out of roll.

When rotating syphon pipe is used, it is supported by a carbon bushing that can be removed by itself.

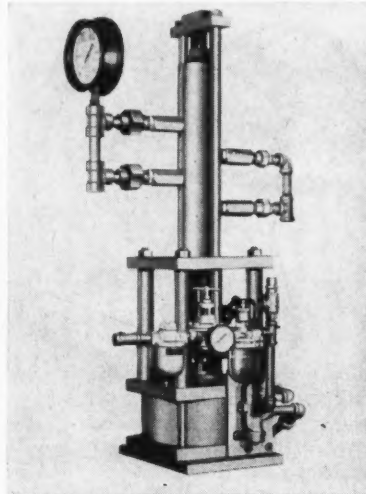
Source: Development of Rotherm Engineering Company Inc., Dept. CP, 4911 W. Irving Park Rd., Chicago 41, Ill. . . . or for more information check CP 4654 on handy form, pages 2 & 3.

Build up plant air to 20,000 psi . . .

pump is lightweight and compact

Uses: In testing tubes, valves, and pressure vessels; in operation of small molding presses; and in other applications requiring small volume at high pressure.

Features: Compact and lightweight.



Compact hydro-pneumatic pump

Description: Pump uses normal plant air as power medium. Provides pressures up to 20,000 psi.

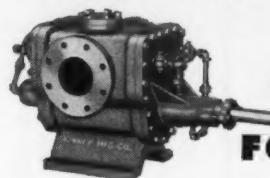
Source: The Aldrich Pump Co., Dept. CP, Allentown, Pa. . . . or for more information check CP 4655 on handy form, pages 2 and 3.

Clapper-type solenoid operates air valve

Elimination of all springs and use of clapper-type solenoid are features of air safety valve specified in 4-page illustrated Bulletin 304, issued by Ross Operating Valve Company, Dept. CP, 120 E. Golden Gate Ave., Detroit 3, Mich. When inquiring specify CP 4656 on handy form, pages 2 & 3.



HARD - TO - HANDLE LIQUIDS ARE "DUCK SOUP" FOR A KINNEY PUMP!



Black strap molasses—one of the many materials best handled by Kinney SD Rotating Plunger Pumps—is thick, sticky, inclined to foam . . . in fact it's everything most pumps can't cope with. But it's "duck soup" for Kinney SD Pumps—the pumps that do difficult jobs easily.

If you're working with a viscous, hard-to-pump material—whether it's molasses, cup grease, soap, asphalt, white lead, or what have you—you'll find Kinney SD Pumps ready-made for your service. There are certain very definite reasons for this:

- 1 Kinney SD Pumps are positive displacement pumps of high volumetric efficiency . . . capable of handling materials even under abnormally high vacuums, day after day, year after year.
- 2 Kinney SD Pumps have no valves, valve seats, springs, gaskets, or complex internal convolutions to impede the flow of liquid—to cause maintenance problems.
- 3 Kinney SD Pumps have large suction and discharge openings which are totally unobstructed . . . the ideal design for fast, effective handling of viscous materials.
- 4 Kinney SD Pumps, in a wide range of sizes, are available steam-jacketed . . . an important feature in pumping asphalt and other materials of poor cold-flow characteristics.
- 5 Kinney SD Pumps are ruggedly built to give long and reliable service.

Send coupon today for Bulletin L48, a detailed catalog of the complete line of Kinney Rotary Liquid Pumps. KINNEY MANUFACTURING CO., Boston 30, Mass. Representatives in New York, Chicago, Cleveland, Houston, New Orleans, Philadelphia, Los Angeles, San Francisco, Seattle, and foreign countries.



KINNEY MFG. COMPANY
3573 WASHINGTON ST., BOSTON 30, MASS.

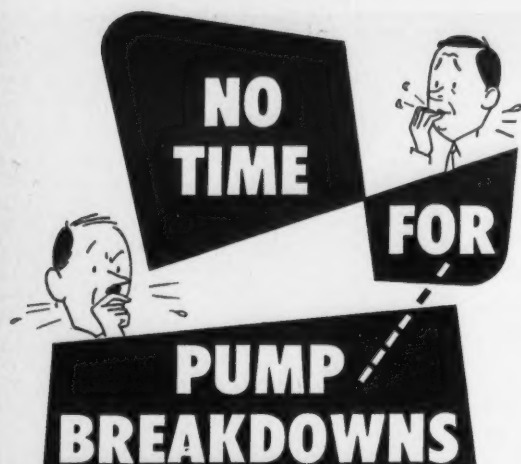
Please send me Bulletin L48 . . . the complete catalog of Kinney Liquid Pumps. My liquid pumping problem involves:

- | | | | |
|--------------------------------------|--|--|---|
| <input type="checkbox"/> Acid Sludge | <input type="checkbox"/> Lube Oils | <input type="checkbox"/> Molasses | <input type="checkbox"/> Tar |
| <input type="checkbox"/> Asphalt | <input type="checkbox"/> Edible Oils | <input type="checkbox"/> Paint, Enamel | <input type="checkbox"/> White Lead |
| <input type="checkbox"/> Chocolate | <input type="checkbox"/> Fuel Oils, Diesel Oil | <input type="checkbox"/> Road Oil | <input type="checkbox"/> Others (see letter attached) |
| <input type="checkbox"/> Crude Oil | <input type="checkbox"/> Grease | <input type="checkbox"/> Soap, Glycerine | |

Name.....Company.....

Address.....

When inquiring check CP 4657 on handy form, pgs. 2-3



consult the WEINMAN man!

Check your pumps! This is no time to risk a pump breakdown. A WEINMAN Centrifugal Specialist will gladly check your present installations, point out possible danger spots and recommend the most efficient liquid handling methods. This WEINMAN service costs nothing and can save you important money and valuable production time.



Because the entire WEINMAN organization concentrates on ONE product—Centrifugal Pumps—WEINMAN serves you best. Chemical processing plants everywhere are benefiting from this concentrated experience. A non-obligating pump consultation can be conveniently arranged. Write, wire or phone.

For liquids carrying solids and foreign material, this WEINMAN Type "U" Non-Clogging Pump is recommended. Capacities from 100 to 2,300 g.p.m. Heads to 105 feet.

Representatives in Principal Cities

Built by Centrifugal Specialists
The WEINMAN Pump Mfg. Co.

294 Spruce Street

Columbus 8, Ohio

When inquiring check CP 4658 on handy form, pgs. 2-3

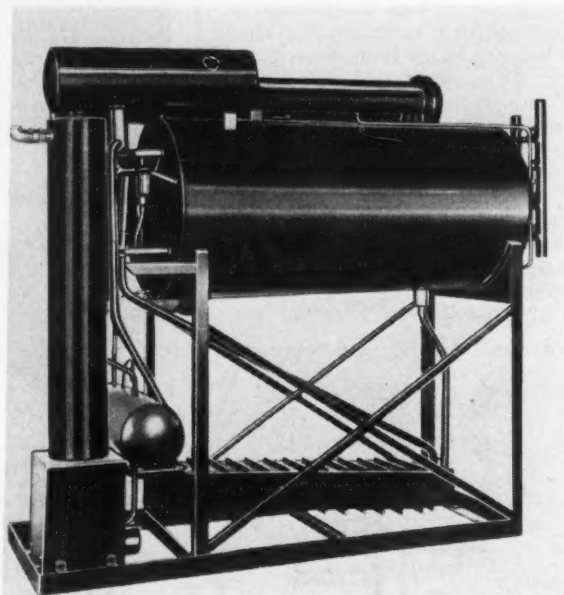
PROCESSING EQUIPMENT

Waste heat or waste steam will chill water . . .

absorption type refrigeration unit occupies only 19 sq ft floor area, but has 20 ton capacity

Uses: Refrigeration unit chills water for piping to air conditioners containing filters, coil and fan. In winter, hot water may be supplied through the same piping system.

Features: Can operate on waste heat or waste steam, in which case cost of operation is practically nothing. Compact unit is 30" wide and less than 8' long, occupy-



Absorption type water chiller

ing only 19 sq ft of floor area. It is hermetically sealed and capacity tested at factory. No field assembly required.

Description: Absorption type water chiller has nominal capacity of 20 tons when it supplies chilled water at 45° and uses 360 lb of steam per hour and condensing water at 85°. Capacity is higher if more steam or cooler condensing water is used.

Company will furnish the refrigeration "core," leaving choice of water circulating pumps, heat exchange surfaces, blowers, filters, steam controls and cooling towers to customer's engineer. A defense order is required.

Source: Servel, Inc., Dept. CP, Evansville, Ind. . . or for more information check CP 4659 on handy form, pages 2 and 3.

Accessibility of brushes simplifies maintenance of mine motors . . .

explosion-proof type in size 1/2-60 hp features easy cable replacement; motors are foot mounted

Uses: For service in mines where explosion-proof motor requirements are within hp range of 1/2 through 60 rated at 230, 250, 500, and 550 volts, and with stabilized shunt, compound or series windings.

Features: All frame sizes in the line utilize two stud brush mechanisms. With this construction, all brushes



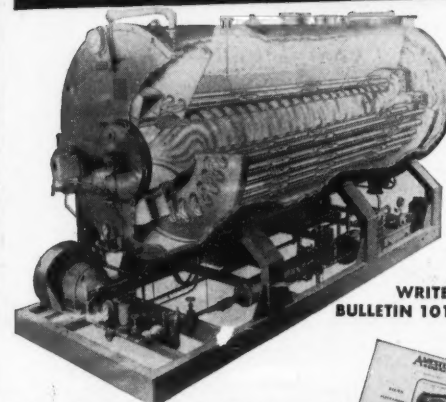
For a better drive, select
the proper Cleveland unit

WRITE for copies of the latest Cleveland catalogs for full information on all types and sizes of worm gear speed reducers—including rating tables, dimensional diagrams and data for both standard and fan-cooled units. Ask for Catalog 200 for standard drives and Catalog 300 for Speed-aire (fan-cooled). The Cleveland Worm & Gear Co., 3257 East 80th St., Cleveland 4, O.

CLEVELAND
Worm Gear
Speed Reducers

When inquiring check CP 4660 on handy form, pgs. 2-3

AMESTEAM GENERATOR



WRITE FOR
BULLETIN 1011-C1

- Complete unit
- Fully automatic
- Easily installed
- Highly efficient
- Oil, gas or oil-gas combinations
10 to 500 h.p. — 15 to 200 lbs.

**AMES IRON
WORKS**

BOX 605, OSWEGO, N. Y.

Builders of Better Boilers since 1848
Manufactured under
License in Canada by VOLCANO, Ltd., Montreal, P. Q.

When inquiring check CP 4661 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

are accessible through two large handhole covers in the upper half of the commutator end shield, greatly facilitating inspection and brush replacement.

Description: Standard motors are foot mounted, but modifications can be supplied, less feet for strap mounting, or with face or flange end shield.

Non-rusting cast bronze handhole covers with heavy integral lugs resist corrosion and do not require special tools for removal. The motors use a cable gland design which permits cable replacement without removing end shield or working through commutator access openings.

High dielectric insulation is applied to coils with a vacuum impregnating machine using company's (Glyptal) synthetic resins to insure maximum penetration. All windings are given finish treatment with red (Glyptal) enamel which provides a moisture resisting insulation not subject to checking or peeling.

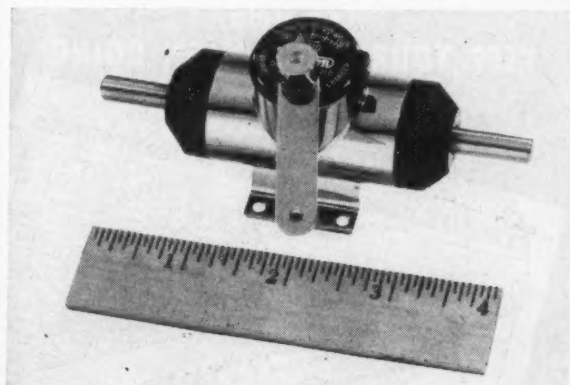
Source: Explosion-proof motors are built by General Electric Company, Dept. CP, Schenectady 5, N. Y. ... or for more information check CP 4662 on handy form, pages 2 and 3.

Regulation of recorders, timers can be remote or automatic . . .

miniature lever type drive has ratings up to 2 inch-pounds of torque

Uses: Variable speed drive with applications on timers, recorders, controllers, computers, indicating mechanisms, and various powered devices.

Features: Affords advantages in applications requiring remote automatic control. By applying linkages, or cams, a wide variety of control techniques is possible. Actuating lever carries a pointer which indicates ratio setting. However, remote ratio indication can easily be obtained



Drive ratio is variable from 1/6 to 6

by means of a scale associated with the remote actuating speed adjuster. Speed is adjusted by changing the radius at which rollers make contact with discs and in this type—4B—rollers are directly turned by the lever control. Thus, lost motion is held to a minimum.

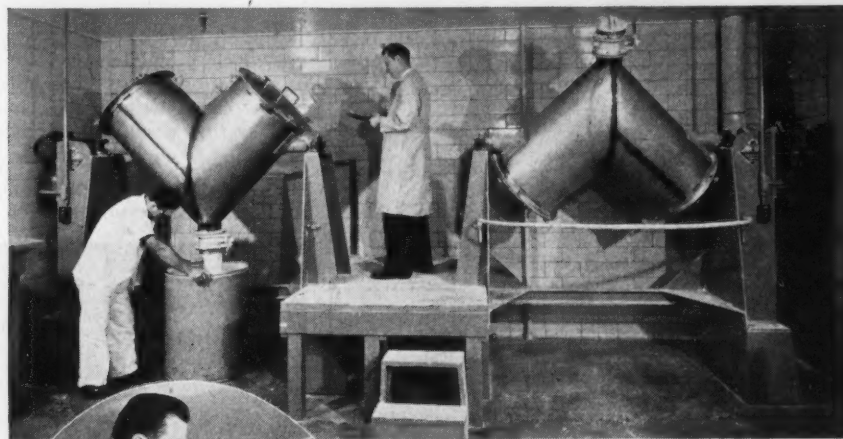
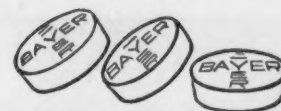
Description: Type 4B drive is a small, compact sealed unit having ratings up to 2 inch-pounds of torque, 0.025 hp, 20,000, rpm with the ratio infinitely variable from 1/6 to 6.

Source: Type 4B miniature variable speed drive is available from Metron Instrument Co., Dept. CP, 432 Lincoln St., Denver 9, Colo. ... or for more information check CP 4663 on handy form, pages 2 and 3.

MAY, 1951



HELPS BAYER CURE A BLENDING "HEADACHE"



Two stainless steel, 10-cubic foot blenders installed by Bayer Aspirin Co.



Large access openings make loading a simple operation.



Smooth interior permits thorough cleaning in a matter of minutes.

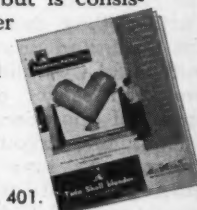
Bayer Aspirin Company, determined to maintain the world-famous Bayer standard of quality on an improved, though hard-to-blend aspirin compound, selected two **p-k** Twin Shell Blenders* for this extremely important operation. These Blenders completely eliminated tableting and separation problems which occurred with overblending in other blenders.

A **p-k** Twin Shell Blender mixes dry materials faster and more thoroughly than any other blender on the market. Blender capacities range from 1 to 300 cubic feet; speeds, from 6 to 29 rpm. Mixing time varies with different products, of course, but is consistently shorter than any other blender.

p-k will run experimental mixes of your material without cost or obligation. It will introduce you to a new and accepted theory of dry blending.

*Patented

Send for Catalog No. 401.



p-k 70 years of heat transfer experience assures you of superior design and construction

- | | | |
|-----------------|----------------------|----------------------------|
| p-k Mixers | p-k Sulfonators | p-k Lube Oil Coolers |
| p-k Coolers | p-k Brine Heaters | p-k Lube Oil Heaters |
| p-k Kettles | p-k Brine Coolers | p-k Reaction Vessels |
| p-k Agitators | p-k Freon Coolers | p-k Instantaneous Heaters |
| p-k Nitators | p-k Soap Crutchers | p-k Quenching Oil Coolers |
| p-k Reboilers | p-k Ribbon Blenders | p-k Storage Heaters |
| p-k Autoclaves | p-k Fuel Oil Heaters | p-k Refrigerant Condensers |
| p-k Condensers | p-k Vapor Condensers | p-k Twin Shell Blenders* |
| p-k Evaporators | | * Patented |

the **P**
Patterson-Kelley Co.
Inc.
20 Lackawanna Ave. East Stroudsburg, Pa.

101 Park Avenue
New York 17

Railway Exchange Building
Chicago 4

1700 Walnut Street
Philadelphia 3

96-A Huntington Avenue
Boston 16

When inquiring check CP 4664 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

fabricated units containing control for a single motor are assembled and wired into a free standing steel enclosure section. Any number of sections may then be bolted and bussed together to form a control center.

Description: Built to AIFE and NEMA standards, centers are available with magnetic full voltage starters, reversing or non-reversing; multi-speed starters; primary or secondary resistance starters; and autotransformer starters. Standard starters are equipped with externally operated circuit breakers, thermal overload protection, and low voltage protection.

Construction includes 2 standard size sections, 76 or 90" high x 20" wide x 20" deep; standardized busses; simplified wiring and installation; local or remote control; and availability as NEMA Type A, B, or C control centers. Further details are contained in maker's Bulletin 4410.

Source: Multitrol is manufactured by Ward Leonard Electric Co., Dept. CP, 31 South St., Mount Vernon, N. Y. . . . or for more information check CP 4669 on handy form, pages 2 and 3.

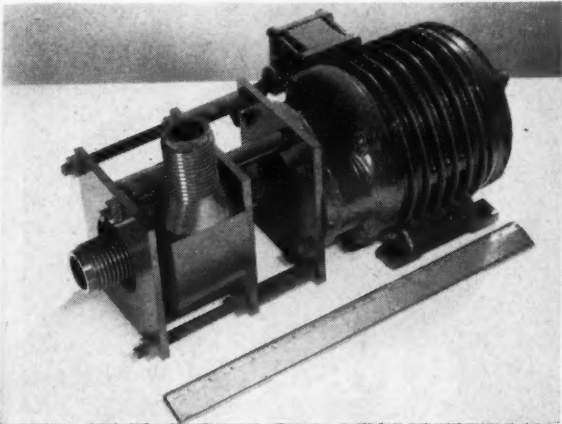
Pumps up to 100 gpm of corrosives . . .

lightweight pump is cast entirely of resins that are available in practically unlimited supply

Uses: Transfer of practically all commercial acid, salt and alkali solutions, and organic solvents. Not suitable for strong oxidizing agents such as nitric or chromic acids or for sulfuric acid above 75% concentration.

Features: Pump is cast entirely of resins of which there is almost an unlimited supply. One pump assembly will handle, alternately, a wide range of acid and alkali solutions or solvents. Light in weight, the pump can be carried easily by one man.

Description: Pumping rate of Nu-Kast pump is up to 100 gpm. Unit may be mounted on floor, tank sides,

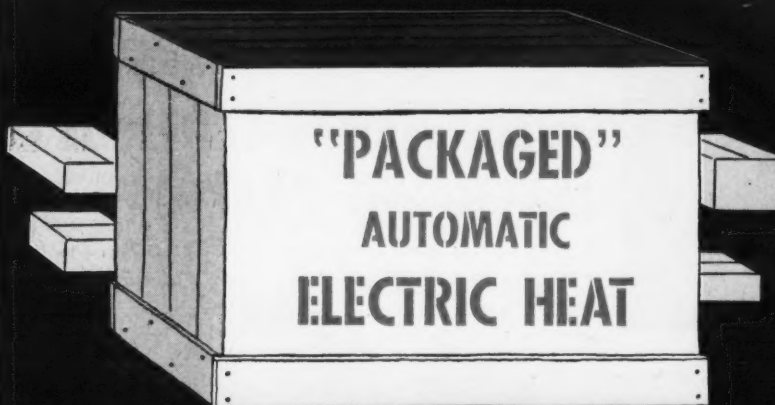


Illustrates compactness of cast resin pump

walls, either vertically or horizontally. Exterior metal surfaces of motor and mount are treated with an acid and alkali resistant resin. Pump impeller and motor shaft are integral. Mechanical seal is used instead of stuffing box. Pump may be obtained without motor, in which case pulley mounts are available if desired.

Source: Made by Nukem Products Corporation, Dept. CP, 111-119 Colgate Ave., Buffalo 20, N. Y. . . . or for more information check CP 4670 on handy form, pages 2 and 3.

CHROMALOX



combining Heater and Thermostat in one unit

ready to go on your Jobs!

● CHROMALOX 'Packaged' Electric Heaters are ideal as permanent or portable heat sources in tanks, drums, process kettles and other containers. With CHROMALOX Heaters you can heat accurately and maintain the temperature of degreasing, cleaning, pickling and plating baths. You can melt greases, asphalt and similar viscous fluids. CHROMALOX Units may be had in the types, sizes and wattages required to efficiently do your heating jobs. They are available with sheaths of copper, stainless steel, alloy and lead for resisting the corrosive actions of the solutions you are using.

Nation-wide engineering service for on-the-job assistance and recommendations. Write, wire or phone for the name of the Chromalox Engineering Representative serving you.

CHROMALOX

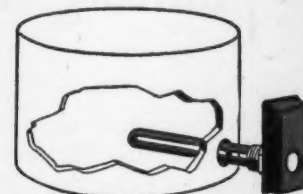
Electric Heat for Modern Industry



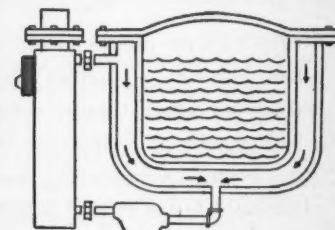
Variety and Versatility to fit your Needs Exactly



Chromalox Immersion Heaters with built-in thermostats for portable or permanent use. Drawing illustrates Immersion Units, equipped with sludge-legs, installed over the side of the tank for direct heating. Available in various metal sheaths to resist the corrosive action of the liquid compounds.



Compact, thermostatically controlled, screw-in type Chromalox Immersion Unit is easily installed in smaller tanks and other containers. Thermostat range is 100° to 180° F.



Chromalox Circulation Heaters give accurate, controlled heat up to 750° F. for heating Dowtherm, Arcolor or heat transfer oils. Other uses include water heating applications such as steam boilers and accumulators, kettles, tanks and processing equipment, preheating fuel oils, heating air, nitrogen and other gases; drying steam, plastic powders, etc.

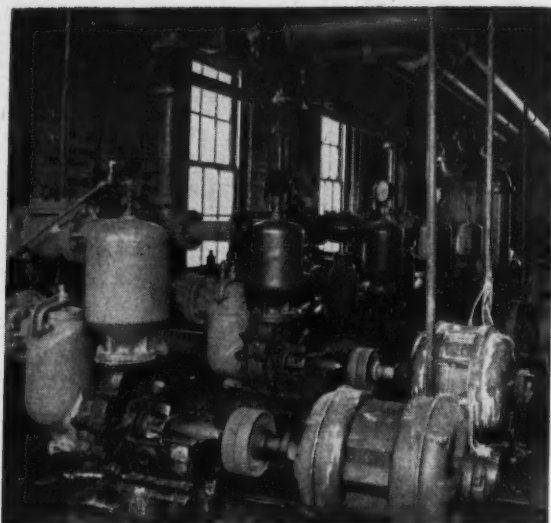
Clip Coupon

For complete details showing how to use Chromalox Heaters in your applications.

Industrial Division
EDWIN L. WIEGAND COMPANY
7517 Thomas Boulevard, Pittsburgh 8, Pa.
Please send "100 Ways to Apply Electric Heat" booklet.

Name _____
Address _____
City _____ Zone _____
State _____

When inquiring check CP 4671 on handy form, pgs. 2-3



Salting It Away

Although salt brine isn't particularly difficult to handle, this manufacturer wanted tops in dependability. So he chose LaBour for a battery of pumps that had to be on the job or else. (The "else" means here, as in so many plants, a lot of dollars lost in production, wasted material and maintenance labor.)

The LaBour pumps prime themselves quickly when necessary, cannot air bind, yet have neither valves nor small, easily clogged fluid passages which would be vulnerable to crystal deposits. Effectiveness is in no way dependent upon close clearances, hence wear or corrosion must reach extremes before performance is noticeably impaired.

More than 28 years of service to the process industries has demonstrated LaBour dependability. You aren't guessing—or hoping—when you specify LaBour.



ORIGINAL MANUFACTURERS OF THE SELF-PRIMING CENTRIFUGAL PUMP

LaBOUR

THE LaBOUR COMPANY, INC. • Elkhart, Indiana, U.S.A.

When inquiring check CP 4672 on handy form, pgs. 2-3

Page 120

PROCESSING EQUIPMENT

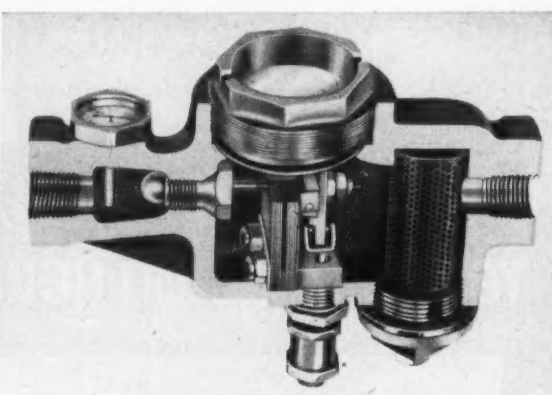
Seven different devices combined in steam trap weighing 8½ lb . . .

has the same capacity and efficiency as conventional 2" traps weighing up to 200 lb

Uses: Standardized steam trap, replacing range of conventional traps from ½ to 2". In superheated power plants it can handle pressures to 650 psi and temps to 1000°F.

Features: Valve is opened by steam pressure and closed by thermal action.

Description: Seven different devices are combined in one compact unit weighing 8½ lb. Devices are: steam trap; air bypass valve; check valve; self-cleaning strainer; flow control glass; temperature indicator gauge; and tem-



Cutaway view of 7-in-1 steam trap

perature controller. Unit has same capacity and efficiency as conventional 2" traps weighing up to 200 lb. It can be installed in any position without affecting its operation; in vertical position it is absolutely frost proof, according to maker.

Bimetal element operating the valve is a function of saturated steam curve, so that one trap can be used for very wide range of steam pressures and temperatures. Discharge temperature can be regulated by external device. No additional joints, nipples, etc. are needed.

Source: Universal steam trap is product of Velan Engineering Company, Dept. CP, 1216 Drummond St., Montreal, Canada . . . or for more information check CP 4673 on handy form, pages 2 and 3.

Suppress fumes and gases with bag-type apparatus . . .

stringent requirements imposed on foundries, chemical plants met by units of simple design

Uses: Collecting sub-micron-sized dust, fumes, and smoke. Designed to meet stringent regulations governing foundry cupolas, metallurgical furnaces, and other sources of dusts in hot gases. Equipment is also suitable for applications involving plastics and chemicals.

Features: Simple in design and construction, units are easily operated and maintained. In municipal tests, suppressor has shown a loss of particulate matter of only .24 to .60 lb/hr, as compared to an allowable loss of 10.3 lb/hr.

Bags are made of special non-inflammable, heat-resistant material and mounted so that they are easily accessible



THE NEW "200"
MORSE
PORTABLE
ROTATOR

CAN BE ADAPTED
TO MOST
ROTATING JOBS!

The ROTATOR can easily be moved from one job to another or steered into close quarters. It is available for tumbling fibre drums as well as steel drums from 1 to 55 gallons. Designed by Morse, the ROTATOR has many practical uses and has been found to pay for its low cost many times over. This Portable ROTATOR meets today's ever-present need to save time and labor.

Write for
additional information.

MORSE MANUFACTURING CO., INC.
124 Dickerson Street Syracuse 2, N. Y.

When inquiring check CP 4674 on handy form, pgs. 2-3



FULL CONE FLAT SPRAY HOLLOW CONE

SPRACO NOZZLES

Write for NOZZLE CATALOG to
SPRAY ENGINEERING CO.
 125 CENTRAL STREET • SOMERVILLE 45, MASS.

When inquiring check CP 4675 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESSING EQUIPMENT

for inspection and maintenance. Any bag can be replaced without disturbing others.

Description: Suppressor collects all gases from stack, cools them to a working temperature and filters out virtually all particulate matter with a bag-type filter. Automatic controls and protective devices are furnished. Stack gases are cooled in a special chamber, where they pass through sprays of water. This chamber is normally placed alongside the bag house. Gases then pass through the chamber, and into bag filters.

Bags are shaken manually for ejection of collected material; or equipment for mechanical shaking can be provided. Where wet type suppressor units have already been attached to top of stacks, units may serve as conditioning chamber as well.

Suppressor when used on foundry cupolas, removes all gases from top of cupola stack and suppresses more than 95% of solids, including particulate matter of micron and sub-micron size.

Source: Bag type suppressors are built by Whiting Corp., Dept. CP, Harvey, Ill. . . or for more information check CP 4676 on handy form, pages 2 and 3.

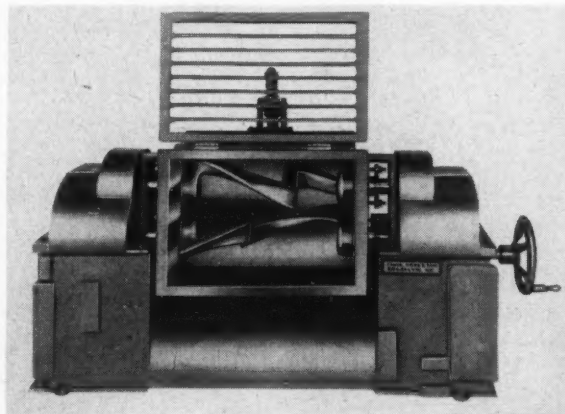
Kneading, mixing temperatures controlled by covers, jackets of heavy duty mixer . . .

selection of stirrers offered; contents easily dumped by manual, hydraulic or motorized tilting

Uses: For mixing and dispersing operations.

Features: Various types of covers and jackets are available for both cooling and heating operations. Variety of sizes up to 150 gal capacity are offered.

Description: Heavy duty kneader and mixer is double-bladed and offers different stirrers available for operation



at same or differential speeds. Quick dumping of material is made easier through an arrangement permitting manual, hydraulic or motorized tilting. In addition, an optional two-speed motor expedites thinning down prior to dumping.

For pilot runs, whether to simulate production conditions and formulae or for use in the laboratory, one-pint, one-quart and two-gallon models are available.

Source: The 41L heavy duty mixer is made by Charles Ross & Son Co., Dept. CP, 150 Classon Ave., Brooklyn, N. Y. . . or for more information check CP 4677 on handy form, pages 2 and 3.

MAY, 1951

TRADE PAPER EDITION
Published by
SCHUTTE and KOERTING
Company

News

ENGINEERING

HEAT APPARATUS • HEAT TRANSFER EQUIPMENT • STRAINERS • CONDENSERS AND VACUUM PUMPS • OIL BURNING EQUIPMENT •
 EXHAUSTORS • FLOW INDICATORS • SAMPLING TUBES • VALVES • SPRAY NOZZLES AND ATOMIZERS • GEAR PUMPS • GASOLINE SYSTEMS

JET EDUCTORS HANDLE GASOLINE DYES FOR STANDARD OIL OF CALIFORNIA

Condensed from **ETHYL NEWS** with permission of Ethyl Corporation.

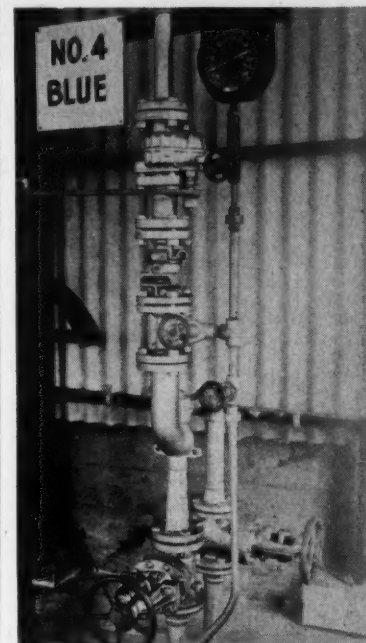
A system for handling light, easily scattered, and extremely penetrating gasoline dyes which has attracted considerable interest among process engineers is that installed by the Standard Oil Company of California at its El Segundo refinery. This system makes use of SK 1½" Fig. 222 Jet Eductors to transfer the dye, with the gasoline blend serving as the motivating, or driving, fluid.

A container of dye is placed on a scale and weighed. If, for instance, 300,000 gallons of motor fuel are to be dyed, and the dye requirements are 1.5 grams per 100 gallons, then 4,500 grams or about 10 lbs. of dye are necessary. With the proper color dye on the scale, the operator notes its weight and the reading at which he should stop the addition of dye. He inserts a flexible hose into the dye container, opens the eductor valve, and draws the proper amount from the container. After the required amount of dye has

passed through the eductor, "wash" gasoline is flushed through the eductor and its connecting lines to clean them. The balance of the mixing operation — to obtain a proper proportion of dye to gasoline — is completed in the storage tank.

Separate eductors are used for each color of dye in order to avoid improper mixing. In addition, this system allows the use of individual scales for each color permitting the use of sensitive scales and avoiding the necessity for multiple handling of dye barrels.

Standard of California has found a number of advantages in its system. Dyes can be weighed accurately and added to gasoline without spilling. Time is saved by avoiding the intermediate step of making dye solutions. Turbulence in the eductor and loop lines provides sufficient mixing to put the dyes into solution. And, the system provides ease in operating and cleaning, adequate facilities for storing and handling dyes, and economical operation. For complete details on SK Jet Eductors, request Bulletin 2-M.

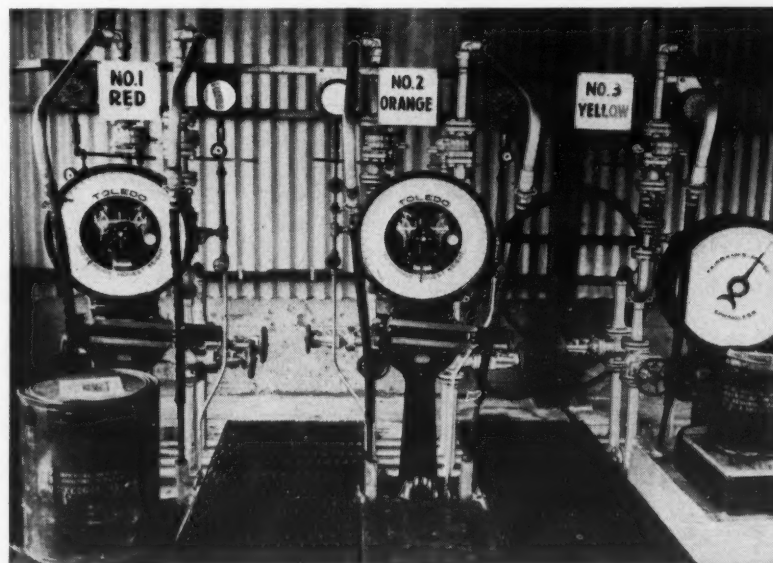


Closeup of an SK Fig. 222 Jet Eductor as used in Standard Oil of California's Dye Handling System.

BULLETIN ON HEAT TRANSFER

SK Bulletin HT-1 pictures and describes standard heat exchangers, generator air coolers, feed water heaters, oil heaters, straight tube evaporators and duplex strainers. Dimensions for various sizes are included in tabular form. Copies available on request.

Photo shows three of the dye eductor manifolds with adjoining scales.



SCHUTTE and KOERTING Company
Manufacturing Engineers

22 CORNWELLS HEIGHTS
BUCKS COUNTY, PA.

Representatives in Principal Cities

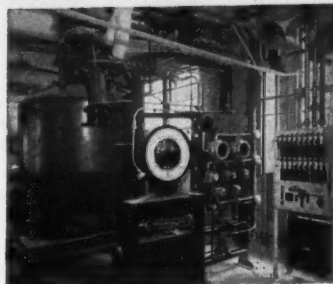
When inquiring check CP 4678 on handy form, pgs. 2-3

ROBINSON Air-Activated CONVEYOR

**Why It Moves
Dry Pulverized
or Fine Granular
Materials at
Low Cost**

• Fluffs up Materials into
a Dense, Fluent Air-
Solids Mixture...No
Slugging Through

• Requires no Motor
Driven Parts to Charge
or Discharge



Robinson Air-Activated Conveyor System
with Automatic Controls and Weighing

In the Robinson System, materials are fed by gravity into the Activator (shown above). Moisture-free air is admitted, causing the material to fluff up into a dense mixture of solids and air and thus become fluent. The charge almost immediately begins to flow to its destination. When the Activator is empty, the cycle is repeated.

If you are processing or producing dry pulverized or fine granular materials, consider handling it into, through or from your plant pneumatically. The Robinson System has much to offer. In writing for Bulletin 312, give details of your problem.

A Division of

ROBINSON

Air-Activated

MORSE BOULGER DESTRUCTOR CO

CONVEYOR SYSTEMS

Representatives in Principal Cities

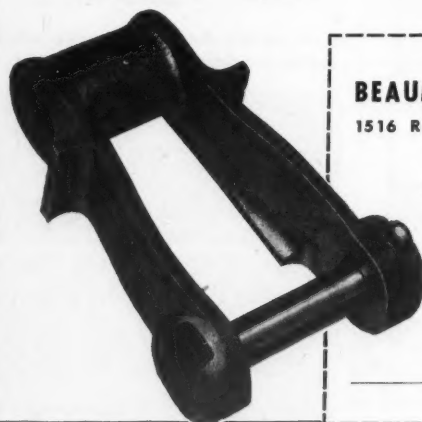
211-V EAST 42nd STREET • NEW YORK 17, N. Y.

Represented in England by Blaw-Knox, Ltd., London • Represented in the French Union and Benelux by Cie Française Blaw-Knox, Paris

When inquiring check CP 4679 on handy form, pgs. 2-3

Bucket Elevator Chain Saves \$10,000

CHEMICAL MANUFACTURER HANDLING PYRITES ORE BY BUCKET ELEVATOR HAD TO REPLACE MALLEABLE IRON CHAIN EVERY TWO WEEKS. COST \$336 PER CHANGE. THEN INSTALLED BEAUMONT "BEAUCALLOY" CHAIN AT TOTAL COST OF \$613. NINETY-FIVE WEEKS LATER THIS CHAIN STILL GOING STRONG. NOT ONE LINK REPLACED. HAD FORMER REPLACEMENTS CONTINUED, CHAIN COSTS ALONE WOULD BE CLOSE TO \$10,000. SEND COUPON TODAY FOR CATALOG 10-B ON "BEAUCALLOY" CHAIN.



BEAUMONT BIRCH COMPANY

1516 RACE ST., PHILADELPHIA 2, PA.

NAME _____

COMPANY _____

ADDRESS _____

When inquiring check CP 4680 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

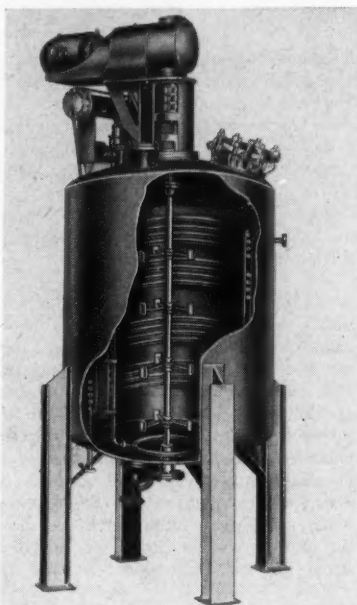
**Hydrogenator features
rapid, thorough
dispersion . . .**

unit built to meet specific needs of individual processor

Uses: Vessel is employed in hydrogenation of compounds . . . such as fats and oils.

Features: Designed for quick, thorough dispersion of gases and solids. Individually built for each application to operate under specific conditions of pressure, vacuum, temperature and degree of agitation.

Description: Radial propeller agitator is designed to provide rapid overturning and turbulent motion in liquor,



Cutaway view of hydrogenator

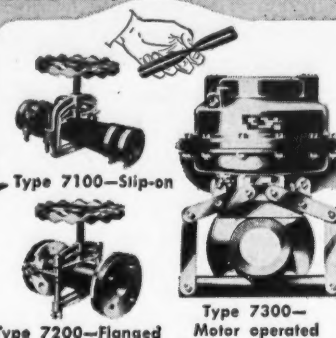
thereby thoroughly dispersing hydrogen and catalyst. Blade arms are removable and can be adjusted to provide some degree of regulation of type and intensity of agitation. Shaft is supported independently at two points within vessel.

Included in vessel design are a right-angle motor reducer, double mechanical seals with all parts accessible without removing drive, manhole with hinged cover, semi-flexible drive coupling and removable bottom guide bearings. Coils are arranged to offer minimum obstruction to proper agitation, and flush outlet valve does not accumulate catalyst.

Hydrogenator can be made of stainless, nickel, monel, inconel or mild steel.

Source: Introduced by Struthers Wells Corporation, Dept. CP, Warren, Pa. . . . or for more information check CP 4681 on handy form, pages 2 & 3.

if it Flows . . .



Sulphuric Acid
HCl Acid
Acetic Acid
Acid Slurries
Brines

Type 7200—Flanged

Type 7300—
Motor operated

Flex-Valve it

FLEX-VALVE is the ideal choice for handling such materials as those listed—either dry or in suspension—at temperatures up to 210 deg.

Resists both abrasion and corrosion; eliminates clogging, plugging, building up; absorbs vibration and misalignment.

Open—it's as free of obstruction as the pipe itself. Closed—it's bubble-tight and it closes tight on all of these materials.

Available in either hand or air operated types in sizes from 1/2 to 12 in.



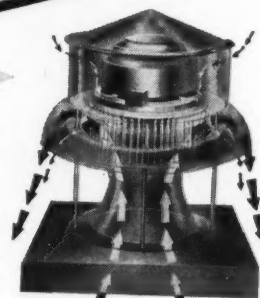
Users have found FLEX-VALVE to be the low-cost solution to tough valving problems. If your present valves aren't 100% effective, take a look at this one. Catalog 455 gives details.

Flexible Valve Corporation

306 COMMERCIAL AVE. • PALISADES PARK, N. J.

When inquiring check CP 4682 on handy form, pgs. 2-3

**GALLAHER
SCROLL EFFECT
for TOP EFFICIENCY**



**GALLAHER Air-Van®
Power Exhauster**

Research tests by The Gallaher Company show conclusively that top performance against 1/4" static pressures and up is impossible without scroll effect. Air-Van is the only power roof exhauster with this built in feature.

This is but one of the many features that make Air-Vans top with industry: certified ratings, unique hood ventilation that forms a positive air seal-off against fumes, low silhouette, economical direct connection, rugged construction and many others.

Capacities 150-11,000 CFM; Static Pressures to 1 1/4"



For complete data, see your Gallaher representative or write The Gallaher Co., Dept. C., 4108 Dodge St., Omaha

The GALLAHER Company

Omaha, Nebr.

Owatonna, Minn.

When inquiring check CP 4683 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESSING EQUIPMENT

Conditioned air freshened by activated carbon panels . . .

easily installed on unit air conditioners, panels deodorize return air from room

Uses: Installed on room air intake of unit air conditioners, these activated carbon panels remove odors and maintain good air "quality" or freshness.

Features: Easily installed on unit conditioners. Made in range of sizes, capacities and efficiencies to meet various requirements.

Description: Panels are perforated metal tubes containing activated carbon, and are held in rigid frame. The panel's resistance to air flow is 0.14" WG. Panels are arranged so that a certain percentage of the already conditioned air being returned from the room passes through them.

Source: Made by W. B. Connor Engineering Corp., Dept. CP, Shelter Rock Lane, Danbury, Conn. . . or for more information check CP 4684 on handy form, pages 2 and 3.

Materials made accessible, floor space saved with prefabricated racks . . .

pallet and skid racks are assembled on-the-spot by "press-fitting" component members

Uses: Racks for skids and pallets.

Features: Prefabricated units are assembled without bolting or welding. Horizontal and upright frames are assembled in a "pressed fit". Racks save floor space, promote efficient storage.

Description: Illustration shows views of a heat treating department before and after prefabricated pallet and



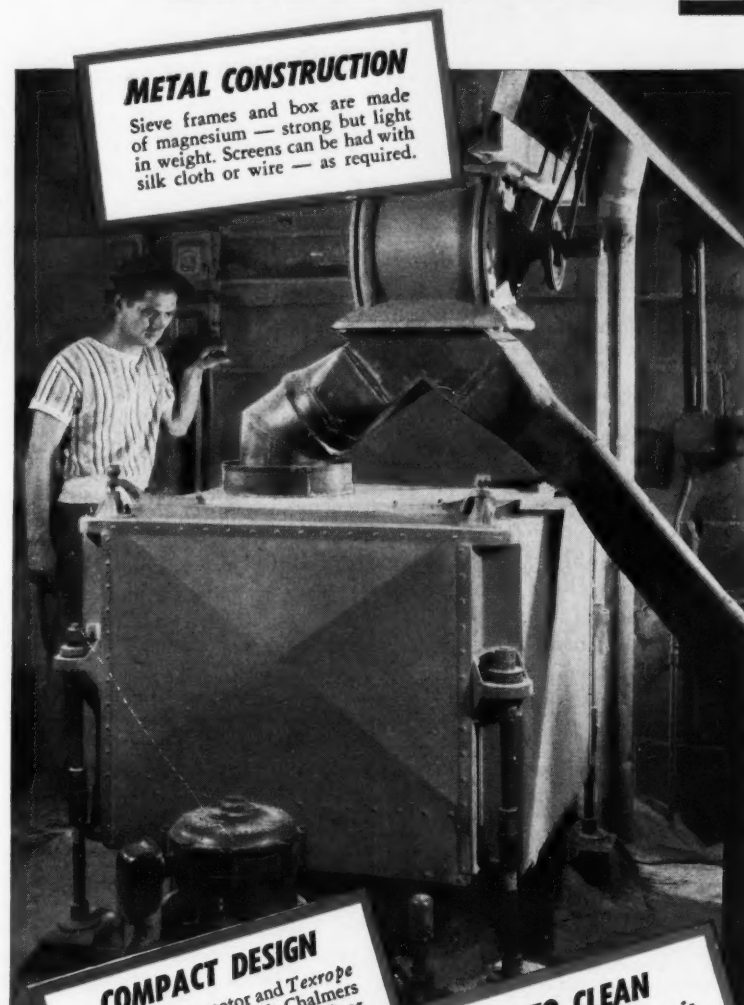
skid racks were utilized. Cluttered-up area at upper left emphasizes the inaccessibility of materials, inefficient handling, and wasted floor space.

Lower right is the same area after rack installation, and disposal of materials in tiers. Note the additional amount of space available and how stock is readily accessible from any angle

Source: Racks are made by Dept. 16 of the American Metal Products Co., Dept. CP, 5959 Linsdale, Detroit 4, Mich. . . or for more information check CP 4685 on handy form, pages 2 and 3.

MAY, 1951

Handles HOT or Abrasive Chemicals SAFELY!



METAL CONSTRUCTION

Sieve frames and box are made of magnesium — strong but light in weight. Screens can be had with silk cloth or wire — as required.

COMPACT DESIGN

Complete with motor and Texrope Drive, this compact Allis-Chalmers sifter requires very little floor space and head room.

EASY TO CLEAN

It can be cleaned with brush, air hose or steam—and can be washed with hot or cold water. There's no danger of warpage.

VERSATILE

Can be used for efficient sifting and grading of a variety of chemicals—including those which are hot and abrasive.

ALL-METAL LOW-HEAD SIFTER

DESIGNED AND BUILT with magnesium sieves and metal housing, the all-metal Low-Head sifter has definite advantages for chemical milling applications.

High-temperature materials can be handled without danger of warping or cracking the sieves—which could occur with parts made of wood. Metal construction also makes possible the sifting and grading of abrasive chemicals.

Complete with Texrope Drive and 1 hp motor, the all-metal Low-Head sifter is easy to install. Little floor space or head room is required. Capacity is high—depending upon number of sieves used in the unit. The standard box has three to seven sieves. A larger unit is available with eight to eleven sieves.

Cleaning is no problem because the entire machine can be safely washed with hot or cold water—or cleaned with air hose, with steam or by brushing.

Get full details from your nearest A-C sales office or write to Allis-Chalmers, Milwaukee 1, Wisconsin.

A-3329

Low-Head and Texrope are Allis-Chalmers trademarks.



ALLIS-CHALMERS

CHEMICAL MILLING AND PROCESSING EQUIPMENT

When inquiring check CP 4686 on handy form, pgs. 2-3

Pack this ADSCO joint at full line pressure!

**Special
Piston Rings
HOLD
line pressure
during
packing
operations**



Production is reaching for an all-time high. Costly service interruptions and resulting operational losses must be eliminated! One major cause of down time...cutting off service to repack pipe line expansion joints...can be completely eliminated. ADSCO Piston-Ring Expansion Joints can be packed *under full line pressure* with no interruption of service.

ADSCO's patented piston-ring feature...with combined internal guide...holds the line pressure even when the packing is completely removed. Venting the relief chamber exhausts any accumulated steam that may have passed the rings and, with no pressure against the stuffing box, all packing may be withdrawn.

Get these ADSCO extra features

NO SCORING OF SLIP because it is in contact only with the packing. The piston rings ride the machined bore of the body.

COMPLETE GUIDING both internally and externally to prevent misalignment.

SPLIT EXTERNAL GUIDE permits installation in smaller spaces.

LIMIT STOPS prevent over-travel. The slip cannot be pulled from the body while in operation.

PACKING LUBRICATION is provided to prolong packing life and ensure smooth performance of the slip.

NON-FREEZING GLAND STUDS AND BOLTS are of non-corrosive metal and always accessible through special openings in the external guide.

ADSCO Piston-Ring Expansion Joints are available in a full range of sizes, in both single and double units, with 4", 8" or 12" traverse per slip, for pressures to 400 psi and greater, and for temperatures to 750 F. and higher. For information, see your ADSCO representative or write for Bulletin No. C-35-15.



AMERICAN DISTRICT STEAM COMPANY, INC. * North Tonawanda, N. Y.

When inquiring check CP 4687 on handy form, pgs. 2-3

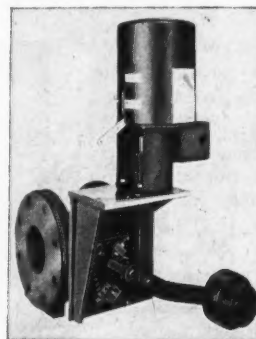
PROCESSING EQUIPMENT

Construction suits valve for services usually calling for stainless steel...

rubber-lined cast iron body; wedge type closure gives positive shut-off, even around shaft bosses

Uses: Rubber-lined valve for emergency shut-off service on lines handling gas or liquid.

Features: With angular seating vane for wedge type closure, rubber is compressed around the periphery of the vane to give positive shut-off even around the shaft bosses. This type of construction makes the cast iron body of valve serviceable in applications that normally call for stainless steel or other alloy. Rubber flanges of the lining take the place of the usual flange gaskets.



Rubber-lined valve for emergency shut-off service

Description: Valve "No. 763" is made in sizes from 2 to 72", and is completely cycled and operated by a direct connected, motor driven pump. Hydraulic pressure raises the counter-weight for the open position. When valve is completely open, operating motor is cut off by integral switch. While the operator is energized, current consumption drops to a minimum. Should current fail, the oil operator is released, the counter-weight drops and the valve is closed. Valve action can be reversed.

Source: Development of the R-S Products Corporation, Dept. CP, 4600 Germantown Avenue, Philadelphia 44, Pa. . . . or for more information check CP 4688 on handy form, pages 2 and 3.

Installed in any position, pumps handle clear liquids at rates to 5,500 gpm...

horizontal end-suction units driven by 1/4-150 hp motors; coupled and bracket-mounted types

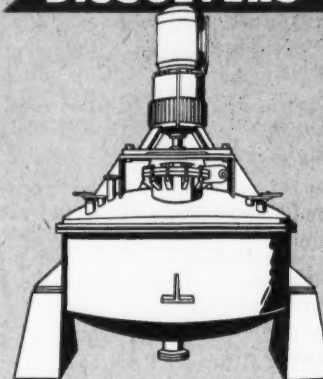
Uses: As general purpose utility pumps, covering capacity range from 10 to 5,500 gpm. Particularly adapted to continuous pumping duty in handling water and other clear liquids, as well as for application to air conditioning, production and processing equipment.

Features: Pumps may be installed and will operate in any position — vertical, horizontal or intermediate angle. Compactness is an advantage in regular or system installations. All units are designed for ease of maintenance and accessibility. Eight or more positions of discharge opening (depending on pump size) provide flexibility of installation. Each pump has safety factors to assure positive performance. Continuous operation with peak performance is obtained regardless of mounting angle. Correct impeller and volute design provides non-pulsating, non-turbulent liquid flow.

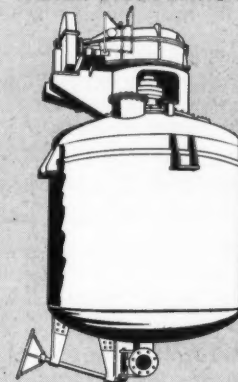
Description: Pumps are of the horizontal, end-suction centrifugal type and may be driven by electric motors in sizes from 1/4 to 150 hp.

Two types are offered: one is a close-coupled electric motor driven pump; other is a bracket-mounted pump for drive from coupling, or V-belt or flat-belt pulley. Liquids

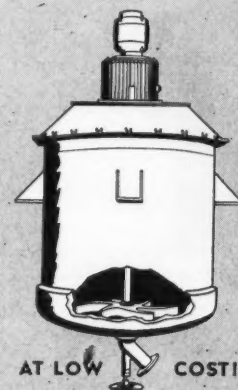
PATTERSON DISSOLVERS



FASTER DISSOLVING...



ALL VISCOSITIES...



AT LOW COST!

Write

**The PATTERSON
FOUNDRY AND MACHINE CO.**

East Liverpool, Ohio, U. S. A.

**The Patterson Foundry & Machine
Company, (Canada Ltd.)**

Toronto, Canada

When inquiring check CP 4689 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESSING EQUIPMENT

can be pumped against heads of up to 260'. In the latter type, standard pump motors are used, permitting quick motor change without dangerous delays or inconvenience.

Within the complete line, impellers and volutes are interchangeable between the two types on identical sizes, simplifying maintenance.

Bulletin B-2300 includes selection charts.

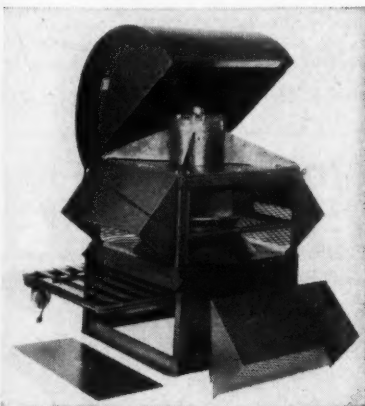
Source: Peerless Pump Div., Food Machinery and Chemical Corp., Dept. CP, 301 West Avenue 26, Los Angeles, Calif. . . . or for more information check CP 4690 on handy form, pages 2 and 3.

Uninterrupted ventilation delivered by motor-driven roof-installed units . . .

positive control is unaffected by weather or wind conditions; extra quiet types available

Uses: For positive controlled ventilating, independent of wind or weather conditions. Provides air deliveries over range of pressures from free air to 1½" static pressure.

Features: Equipped with self-cooled motor. Positive pressure ventilation is provided to cool motor and motor compartment with outside air. Suction pressure produced by fan wheel, which is fitted with back-plate fins, maintains a steady, low velocity, cooling air stream that passes through the motor compartment and motor.



Power roof ventilator completely assembled in one housing

curbing and fitting of air control accessories into roof or curbing section. Ventilator is easily and quickly installed, wired, and serviced.

Ventilator is leak-proof, hinged on two sides for inspection. An air shield separates motor compartment from air stream. Rain-proof air discharge louvers are provided on all four sides. Backward-curved type centrifugal fan wheel, with non-overloading characteristics, protects motor against overload under all conditions. Eleven sizes available, each with two to four different speeds. Low speeds for quiet operation are available in all eleven sizes.

Units have sturdy welded steel frame with galvanized iron sheathing. An optional feature is sprayed-on insulation to prevent condensation forming on inside of housing in handling of steam in cold weather.

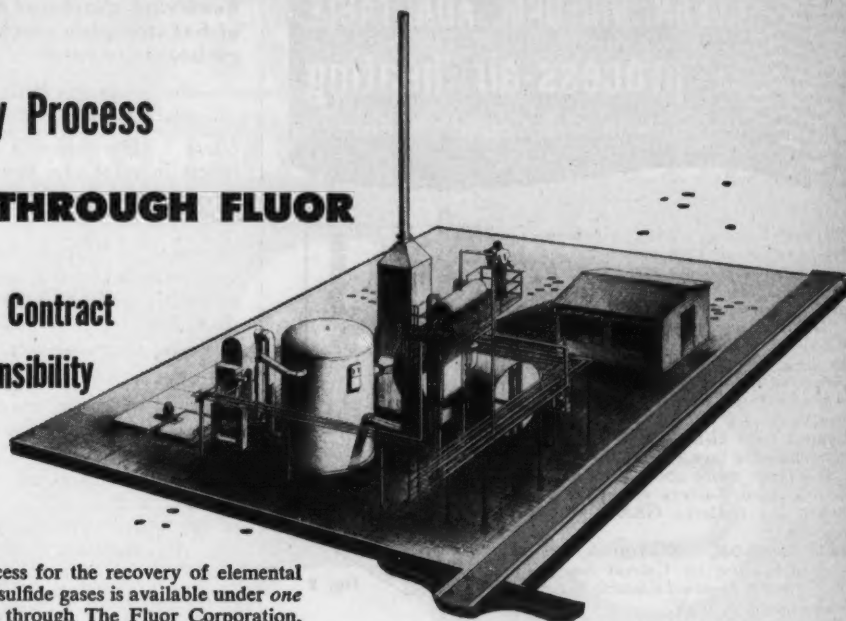
Capacities are certified in accordance with Standard Test Code of the ASHVE and National Association of Fan Manufacturers.

Source: ILG Ventilating Co., Dept. CP, 2850 North Crawford Ave., Chicago, Ill. . . . or for more information check CP 4691 on handy form, pages 2 and 3.

The Mathieson Sulfur Recovery Process

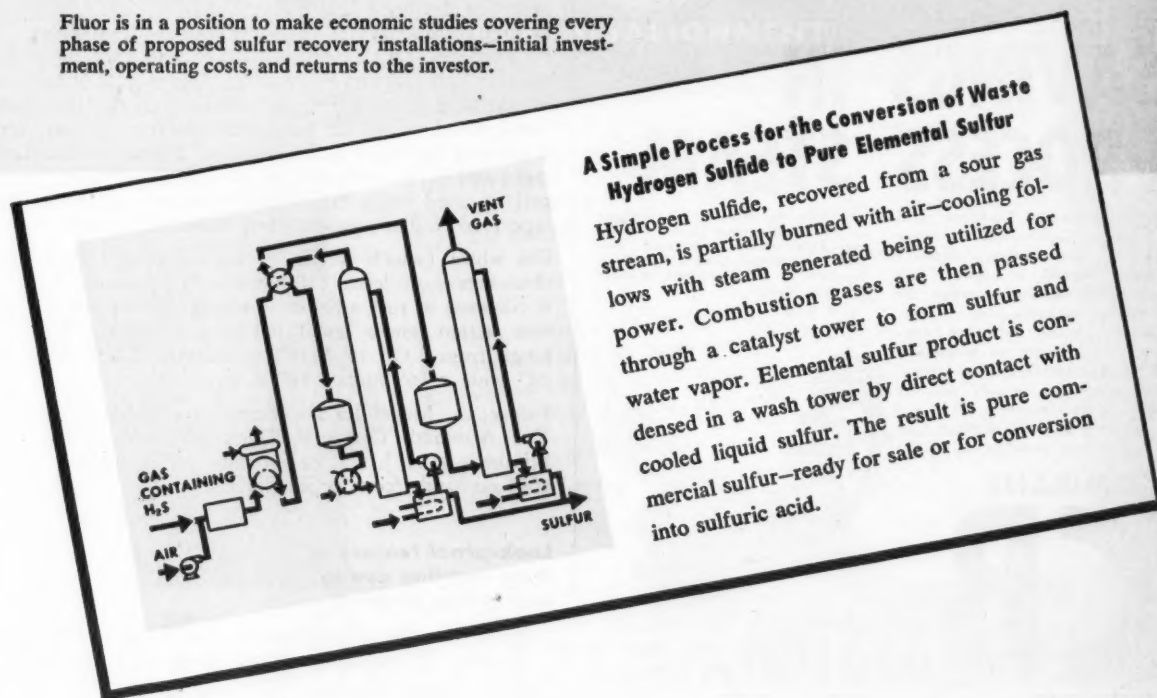
AVAILABLE THROUGH FLUOR

- Under ONE Contract
- ONE Responsibility



The proven Mathieson Process for the recovery of elemental sulfur from waste hydrogen sulfide gases is available under one contract, one responsibility through The Fluor Corporation, Ltd. With over 30 years' experience in the design, engineering, and construction of plants and facilities for the petroleum and chemical industries, Fluor possesses the background, the skilled personnel, and the know-how essential for the practical interpretation of the Mathieson Process into your particular sulfur recovery program.

Fluor is in a position to make economic studies covering every phase of proposed sulfur recovery installations—initial investment, operating costs, and returns to the investor.



A Simple Process for the Conversion of Waste Hydrogen Sulfide to Pure Elemental Sulfur

Hydrogen sulfide, recovered from a sour gas stream, is partially burned with air—cooling follows with steam generated being utilized for power. Combustion gases are then passed through a catalyst tower to form sulfur and water vapor. Elemental sulfur product is condensed in a wash tower by direct contact with cooled liquid sulfur. The result is pure commercial sulfur—ready for sale or for conversion into sulfuric acid.

BE SURE WITH
FLUOR

THE FLUOR CORPORATION, LTD., 2500 S. Atlantic Blvd., Los Angeles 22, Calif.

New York, Chicago, Boston, Pittsburgh, Tulsa, Houston, San Francisco, Birmingham, Calgary.

REPRESENTED IN THE STERLING AREAS BY: Head Wrightson Processes Ltd., Teesdale House, Baltic Street, London, E.C.I., England.

When inquiring check CP 4692 on handy form, pgs. 2-3

CLEAN, UNIFORM, ADAPTABLE process-air heating with G-E Calrod[®] heaters

Drying, baking, curing, ripening, or many other air-heating processes can be easily accomplished with G-E Calrod heaters—with forced or natural convection.

It's easy, for example, to install fin-Calrod heaters in ducts (see Fig. 1) to heat air in ventilating systems, ripening or drying rooms.

Ovens for baking, drying, dehydrating, etc. are easily and accurately heated with G-E Calrod tubular or strip heaters (see Fig. 2).

To learn more about how to apply G-E Calrod heaters to process air, write for bulletin GEA-5096. And for the **FREE CATALOG**, GEC-1005A, on the complete line of Calrod heaters—Sect. 720-18, General Electric Company, Schenectady 5, N. Y.

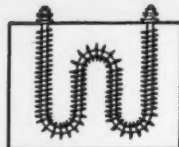


Fig. 1

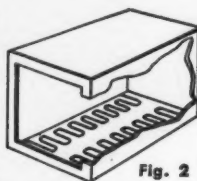


Fig. 2

*Reg. U.S. Pat. Off.

GENERAL ELECTRIC

When inquiring check CP 4693 on handy form, pgs. 2-3

SAVINGS IN PROCESS STEAM

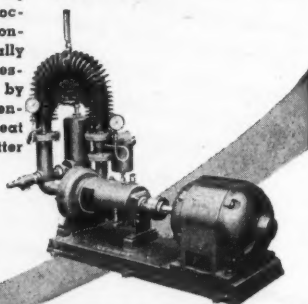
In 66 industries Cochrane C-B System of Condensate Drainage Control has helped produce quality goods at lower cost through better steam usage. By providing optimum heat at process equipment, returning condensate to boiler at practically the same temperature and pressure as when it left, and by draining condensate free of entrained air to boiler without heat loss, it has resulted in better

products at substantial savings in fuel, time and labor. Write for Publication 3250 and you will get some profitable ideas on how to get more out of your process steam.

COCHRANE

CB

SYSTEM OF CONDENSATE DRAINAGE CONTROL



COCHRANE CORPORATION

3162 N. 17th Street, Philadelphia 32, Pa.

In Canada: Canadian General Electric Co., Ltd. Toronto

Please send me a copy of your Publication No. 3250 on Cochrane C-B System of Condensate Drainage Control

Name

Firm

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City

Zone

State

When inquiring check CP 4694 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

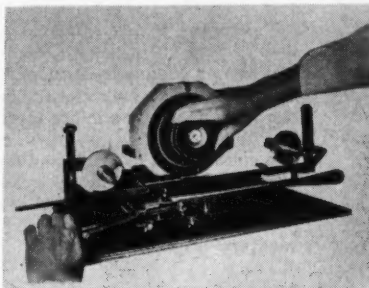
Revolving character head of hot stamping machine embosses in color . . .

maker reports both thermoplastics and thermosetting plastics can be color stamped successfully

Uses: Hot stamping machine for embossing numbers or letters in color (by means of roll leaf transfer tape) on such materials as plastics, fibre, wood, paper, and baked enameled metals.

Features: Manufacturer reports that the extreme pressure delivered by this machine together with the provision of sufficient heat and the manner of engraving the hardened steel character dies makes this machine suitable for hot stamping thermoplastics, and, in some cases, thermosetting plastics.

Description: In operation, the hot stamping character head revolves in one position, but the double slide table to which the work is clamped moves left to right, inward and outward so that work is brought into stamping position and then lifted against the die. Automatic advance slides feed table forward at each swing of screw pressure lever, thereby providing automatic spacing of characters.



Selecting character for stamping

Heat for die head is provided by ring-type heating elements in die head that plug into regular 110-220 vac electric light plugs. Thermometer in die head gives visible temperature check. Insulated hand wheel rotates die wheel for selection of characters, made easy by index and indicator. Frame extends both right and left to carry transfer tape feed roll and re-wind roll of used color tape. Adjustment is provided for tape feed control; guides carry tape directly under dies.

Die wheel (which carries 40 individual and replaceable characters — 26 letters, 10 numbers, 4 punctuation marks) is enclosed in rock-asbestos insulation except for the bottom section where actual stamping is done. Die sizes range from 1/16 to 3/16" characters. Dimensions are 28" wide x 16" high x 18" deep.

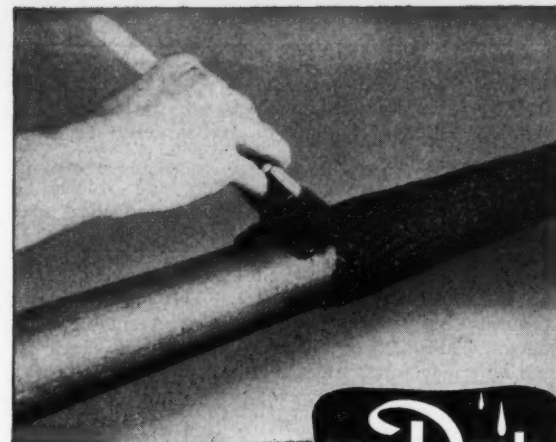
Source: Model LH hot stamping machine is made by The Acromark Company, Dept. CP, 490 Morrell St., Elizabeth 4, N. J. . . or for more information check CP 4695 on handy form, pages 2 and 3.

Leak-proof feature of hose coupling due to expanding packing . . .

swivel action allows hose to un-kink easily; serviceable under all conditions where hoses are used

Uses: Hose coupling for lines carrying gas, water, grease, oil, etc. — under either hot or cold conditions and at all pressures. Sizes range upwards from 1/4" with no limits. Finding extensive applications in the steel industry where they are speeding-up roll changes by offering quickly broken connections.

Features: Packing distinguishes this coupling from conventional couplings. It is an expanding, vee-cut type that is placed under compression when the two halves of



COVERS PIPES TANKS, WALLS

NoDrip

Anyone can brush, trowel or spray NoDrip on any clean, dry surface. Goes on like plaster, forms a seamless, protective coating. **STOPS CONDENSATION DRIP!**



NoDrip keeps equipment and floors safe and dry; prevents corrosion of metal and prolongs its life. Acid, alkali and brine resistant. Comes in 1, 5, and 55 gal. drums, ready for use.

TRY NoDrip

Apply NoDrip to a small area, compare the results with uncovered portions.

Send for free NoDrip Handbook

J. W. MORTELL CO., 530 Burch St., Kankakee, Ill.

When inquiring check CP 4696 on handy form, pgs. 2-3

Smooth Vibrationless PROPELLERS

for MIXING, STIRRING
AERATING, PUMPING
AGITATION



A Michigan 34" Stainless Steel propeller with split hub for mounting in receptacle through manhole.

Manufactured by an exclusive process, Michigan propellers are perfectly balanced to avoid whip and strain on shafts. They are available for original equipment, replacement or special application in a wide range of materials and in sizes up to 60". Write for latest data folder.

MICHIGAN WHEEL CO.
GRAND RAPIDS 3, MICHIGAN

When inquiring check CP 4697 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESSING EQUIPMENT

the coupling are joined. Expansion continues as pressure builds up in the line. Leak-proof characteristics are the ultimate result.

Swivel action of coupling allows hose to un-kink itself with ease.

Description: "Quick-Seal" hose couplings can be fabricated from any metal required to meet specific service conditions. In addition, they are made in "block-ell" shape incorporating a right angle into the connection. An automatic shut-off valve can be built into either or both sides. Any end connections necessary for inserting couplings into existing equipment can be built into the coupling, eliminating need for extra fittings.

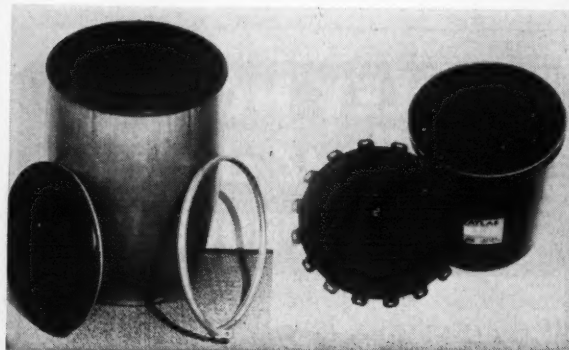
Source: Robb Manufacturing Co., Dept. CP, 1309 Washington Blvd., Pittsburgh 6, Pa., is the maker ... or for more information check CP 4698 on handy form, pages 2 and 3.

Polyethylene coating extends serviceability of steel drums, pails ...

possible to handle materials ranging from foodstuffs to corrosive acids and alkalis

Uses: Polyethylene-coated steel drums, pails, and hackney-type drums in sizes from 5 to 55 gallon for holding materials ranging from foodstuffs to corrosive acids and alkalis.

Features: Coating resists moisture and most chemicals at ordinary temperatures; it adheres strongly to steel con-



Some of the containers that are being internally coated with polyethylene

tainer. Flexibility and toughness extend service life under rough handling.

Merely washing out the inside of the container after use readys it for repeated service.

Description: Some of the substances successfully shipped in these coated containers include detergents; dye-stuffs; sodium hypochlorite; acid such as nitric, hydrofluoric, sulfuric, phosphoric, hydrofluosilicic, and fatty types; and many other edible and non-edible products.

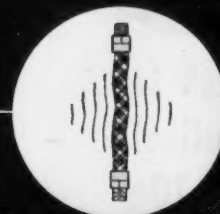
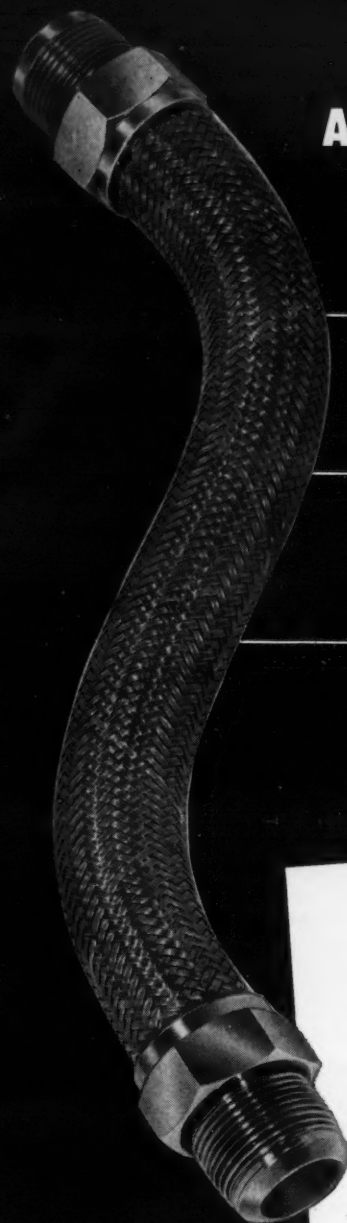
Tested with copper sulfate and muriatic acid, the polyethylene coating (produced by Bakelite Division of Union Carbide and Carbon Corporation) showed no trace of copper deposits after 168 hours. A bung-type open-head drum with two coated bungs, completely coated inside, is also available.

Source: Coated containers are produced by Delaware Barrel Company, Inc., Dept. CP, P.O. Box 1648, Wilmington, Del. ... or for more information check CP 4699 on handy form, pages 2 and 3.

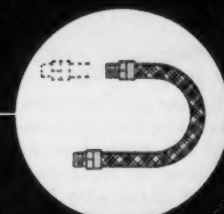
MAY, 1951

Titeflex

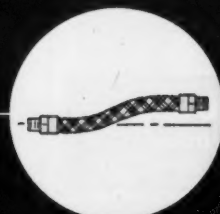
ALL-METAL FLEXIBLE TUBING



FOR VIBRATION



FOR FLEXING



FOR MISALIGNMENT

You can't beat Titeflex for conveying liquids, gases or semi-solids when there is any kind of motion present. Here are the facts about this better-built flexible tubing:

- ★ Made in five metals—brass, bronze, stainless, Monel, Inconel.
- ★ Types and sizes to withstand heat to 1550°F.
- ★ Types and sizes for pressures up to 6800 psi.
- ★ Supplied with any type of fittings—standard or special.
- ★ Stays flexible and stays tight under severe conditions.

There's a style of Titeflex for almost every need—and Titeflex is *all-metal*, to last longer in any kind of service.

Write for complete catalog.

Titeflex, Inc.

509 FRELINGHUYSEN AVE.

NEWARK 5, N. J.

TITEFLEX FILLS TUBING REQUIREMENTS TO A...



When inquiring check CP 4700 on handy form, pgs. 2-3

Research Spray Dryer



for
**PILOT PLANT
and LABORATORY
OPERATIONS**

**Ask for
Bulletin
D-106**

This new unit provides instant drying at low temperatures with close control of moisture content of the finished product. Recommended for all applications requiring small drying capacities, including high-value low-volume pharmaceuticals. Full information on request.

SWENSON EVAPORATOR CO.

Division of Whiting Corporation
15667 Lathrop Ave. Harvey, Illinois

When inquiring check CP 4701 on handy form, pgs. 2-3



- NEWEST DESIGN IMPROVEMENTS
- GREATER CAPACITIES
- WIDER RANGE OF APPLICATION for

**LOW OR HIGH
VISCOSITY
LIQUIDS
OF ALL
TYPES**

New Blackmer Hand Pumps provide easier, faster dispensing from drums or wheel tanks, and for liquid materials handling up to 28 gallons per minute.

FOR COMPLETE DETAILS

Folder illustrates models for dispensing, refueling, underground tank service, etc., with accessories for choice of mounting. Write for folder "HP6."



BLACKMER PUMP COMPANY
1809 CENTURY AVE., S.W., GRAND RAPIDS, MICH.

When inquiring check CP 4702 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

**No chattering, noise, vibration
when cellulose-bag sealer-punch
is mounted on steel table . . .**

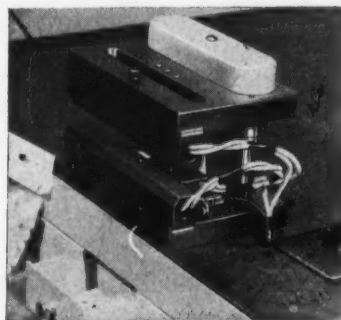
bags, envelopes handled at rates of up to 1,000 per hr; may be operated automatically or manually

Uses: For sealing and punching cellulose bags and envelopes at rates of up to 1,000 per hour.

Features: Adjustable thermostat permits easy regulation of heat in jaws of sealer. Device is positioned near edge of table top so bags may hang over and be lined up on shelf at front of machine. Jaws and punch can be operated either by built-in compressed air cylinder or manually by foot pedal.

Description: Entire sealing and punching unit is mounted on a sturdy steel table with Masonite top.

Heavy construction of table avoids chatter or vibration during sealing and punching operations. Sealer consists of serrated and hardened jaws that are heated electrically. Fastened to lower jaw is a punch and die set which will automatically punch any shape hole desired. Removal of a single nut releases upper jaw and die set for cleaning and inspection.



Sealer-punch on steel table

Action of unit is straight up and down motion, similar to that of a punch-press. Special controls regulate speed of operation, and pressure of jaws and punch. Muffler silences air exhaust noises. Operator safety and simple maintenance are emphasized in design.

Source: Sealer-Punch is made by Sandmann Engineering Co., Dept. CP, 2531 East 73rd St., Chicago 49, Ill. . . . or for more information check CP 4703 on handy form, pages 2 and 3.

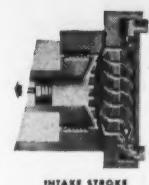
**Change in motor controller's
circuit simplifies starting
after voltage drop . . .**

relay keeps pushbutton circuits active; nothing added to starter-contactor

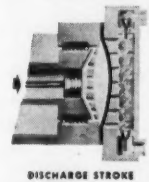
Uses: For power circuits subject to voltage dips or momentary loss of power, providing under-voltage protection for motor starters.

Features: With this protection method, nothing is added to the starter-contactor. Only the push button control circuit is changed to introduce capacity into the coil circuit after the contactor closes. A small timing relay keeps the push button operating coil circuit "active" for up to 2 seconds so that the motor will restart if normal voltage returns within the timing of relay. Work stoppages are held to an absolute minimum, and restarts are generally fewer than with the usual magnetic starter UVP circuit.

Description: Starter remains locked-in down to a low voltage, allowing motor to reaccelerate if voltage recovers within 2 seconds or less. To achieve this protection in the past, starters have been provided with a mechanical latch



INTAKE STROKE



DISCHARGE STROKE

The LAPP PULSAFEEDER
principle of proportional
pumping combines advantages
of **PISTON** and **DIAPHRAGM**
design.

Reciprocating piston action—positive displacement. Diaphragm acts only as balanced, floating partition, isolates chemical being pumped. Pumping rate continuously variable while pump is in operation. Also available: Auto-Pneumatic Pulsafeeder with automatic-pumping-rate control, responsive to variable flow, pH, temperature, liquid level, pressure or other variables.



Lapp

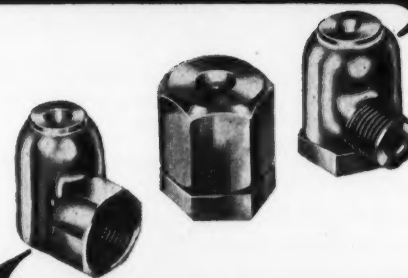
PULSAFEEDER

PISTON-DIAPHRAGM CHEMICAL PROPORTIONING PUMP

WRITE for Bulletin 262 with complete description and specifications.
LAPP INSULATOR CO., INC., PROCESS EQUIPMENT DIVISION, 41.7 MAPLE STREET, LE ROY, N.Y.

When inquiring check CP 4704 on handy form, pgs. 2-3

MARLEY NOZZLES
are *First* choice in
CHEMICAL PROCESSING



Chemical processing plants all over the world pick MARLEY NOZZLES for their outstanding efficiency in providing maximum break-up of water at lowest pressures. Three designs are available . . . ONE PIECE, TWO PIECE, ATOMIZING. None have moving parts . . . All meet specific needs. Write for Bulletin SN3-50 today.

THE MARLEY COMPANY, INC.
KANSAS CITY 15, KANSAS

When inquiring check CP 4705 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESSING EQUIPMENT

to hold the contacts closed, once the contactor arm closes magnetically. To open the contactor, a magnetic trip was supplied to release. Although a starter of this type does not allow the contacts to hesitate or remain in an unsealed position with reduced contact pressure which might permit the contacts to weld under the heavy current of a low voltage condition, it is difficult to "inch" a motor-drive with a starter equipped with a mechanical latch and magnetic tripping mechanism.

By this development in motor control, circuit has advantage of holding contactor closed magnetically down to a low voltage (about 25% of normal voltage); upon further drop in voltage, contacts break cleanly. Magnetic starters arranged for standard under-voltage protection allow contactor-armature to break seal when voltage drops about 20% below normal. In this unsealed position, contacts are in "kissed" position under reduced contact-pressure.

When the voltage decreases to about 25% of normal value, the contactor drops out slowly because with a standard magnet-coil circuit, the current through the operating coil increases when armature breaks seal. When the voltage reaches about 25% of normal value causing armature to open, coil current decreases rather than rises when armature seal is broken. This causes a clean break of contacts and eliminates the danger of contacts welding.

Source: The Electric Controller & Mfg. Co., Dept. CP, 2700 East 79th St., Cleveland 4, Ohio . . . or for more information check CP 4706 on handy form, pages 2 and 3.

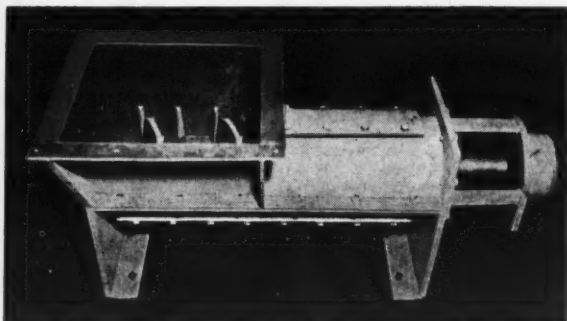
All moving parts of prebreaker easily reached for cleaning . . .

extra strong crusher utilizes high torque at relatively low speeds, takes heavy shock loads

Uses: Crushing and breaking. Can be used in place of jaw, roll and rotary crushers, hammer mills and shredders in many applications.

Features: Simple, extra strong construction makes all moving parts readily accessible for servicing and cleaning and permits handling of heavy shock loads. Breaker uses high torque at relatively low speeds.

Description: The Rietz Prebreaker is available in five sizes, ranging from 10 to 100 rpm, 1/2 to 100 hp, 6 to 8"



Strong, simply constructed breaker

rotor diam, and 10 to 48" effective length. All models, including special designs, are made in both carbon steel and stainless steel to meet requirements. Special accessories are available.

Source: Development of Rietz Manufacturing Co., Dept. CP, 441 Folsom St., San Francisco 5, Calif. . . . or for more information check CP 4707 on handy form, pages 2 and 3.

MAY, 1951



TYGON
THE VERSATILE CORROSION-RESISTANT
PLASTIC

STOPS CORROSION

Tygon Plastic makes an ideal gasketing material for corrosive service. It is resistant to not only all the chemicals rubber will handle satisfactorily, but is particularly effective with highly oxidizing solutions where rubber is noticeably weak.

For gasketing and related services **Tygon** is available in press polished sheets up to 30" square and in thicknesses from 1/16" to 1/2"; in calendared sheets 27" wide, 1/4", 3/8" or 1/2" thick and in any length; in extruded flexible tubing or solid cord in continuous lengths and in diameters up to 2 1/2" O.D.; or in a variety of standard or special extruded shapes. Likewise we can furnish cut or molded gaskets, grommets, etc., to your exact specifications.

It's worth checking into — one or more of the many specialized formulations of the versatile series of Tygon Plastics may provide the answer to some of your toughest corrosive problems.

The U. S. Stoneware Co., Tallmadge Square, Akron 9, Ohio



SHEET TYGON heavy duty tank linings; die cut gaskets.



EXTRUDED TYGON — Tubing, channel, special shapes, solid cord.



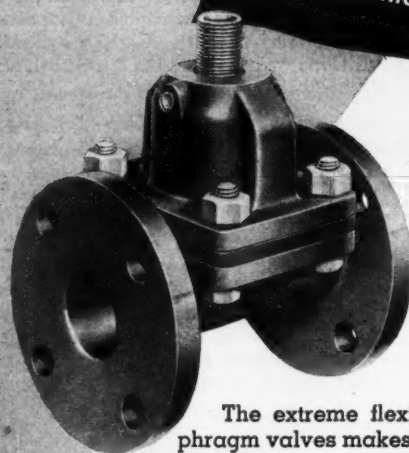
LIQUID TYGON quickly applied coating, as protection against corrosive fumes.

MANUFACTURERS AND FABRICATORS OF CORROSION RESISTANT MATERIALS AND EQUIPMENT SINCE 1865

When inquiring check CP 4708 on handy form, pgs. 2-3

Any of these "Proven Operators"

- ✓ Westinghouse, Bendix Westinghouse
- ✓ Barber-Colman, Cutler-Hammer and Philadelphia Limited torque motors
- ✓ All pneumatic motors
- ✓ Air loaded pneumatic motors
- ✓ All double and single action air cylinders
- ✓ Mechanical springs



may be used with HILLS-McCANNA Diaphragm Valves for automatic or remote operation

The extreme flexibility of Hills-McCanna diaphragm valves makes it possible to satisfy virtually any preference or requirement in the use of mechanical operators. All of the operators listed above plus others are applied to standard Hills-McCanna sliding stem valves to provide complete units that utilize your existing operating methods.

Designed especially for conveying "hard-to-handle" fluids such as acids, alkalis, volatile and viscous substances, slurries, semi-solids, etc. Hills-McCanna diaphragm valves give you the advantages of "special" design on a standardized basis. Sizes range from 1/2" through 14" (not all methods of operation are available in all sizes); pressure up to 150 psi; temperatures to 180°F. (some applications to 220°F.). Write for complete information, HILLS-McCANNA CO., 2370 W. Nelson Ave., Chicago 18, Ill.

HILLS-McCANNA Saunders patent diaphragm valves

*Proportioning Pumps
Force-Feed Lubricators • Magnesium Alloy Castings*

When inquiring check CP 4709 on handy form, pgs. 2-3

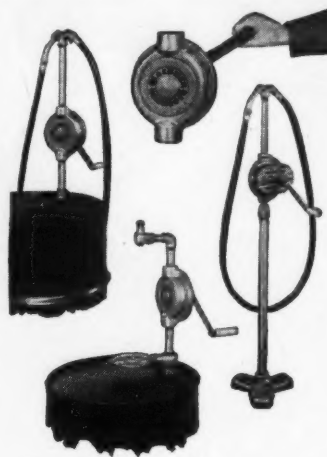
PROCESSING EQUIPMENT

Many models and styles in hand pump line . . .

capacities range from 7-28 gpm; all are for liquid

Uses: Line of hand pumps for liquid service; 5 series are available.

Features: Line is available as pump only; with suction and delivery pipes for drums and skid tanks; with return drip-pan for barrel mounting; with re-



Illustrating 4 models in hand pump line

fueling hose and nozzle; with floor stand for underground tanks; with brackets for wall or foot mounting; with locking device; and with changes of accessories for most combinations of the above models.

Description: Series 210 is direct drive with 10 gpm capacity. This is the only series with sliding vane construction; all others are of swinging vane construction with cam-bored bodies that deliver a nonpulsating flow. All vanes are self-adjusting for wear, according to maker.

Series 404 is direct drive pump with capacity of 10 gpm.

Series 414 is direct drive with 8 or 10" crank and 1 or 1 1/4" openings for light or heavy liquids. Capacity is 14 gpm.

Series 807 and 828 are geared pumps for normal or viscous liquids wherever liquids are dispensed from drum-size or larger containers. They provide faster operation, with capacities from 7 to 28 gpm.

Literature picturing complete line is available from manufacturer.

Source: Hand pumps are made by Blackmer Pump Company, Dept. CP, 1809 Century Ave., Grand Rapids, Mich. . . . or for more information check CP 4710 on handy form, pages 2 and 3.

NEW PERMANENT NON-SLIP



FIRM-GRIP Genuine NEOPRENE LATEX GLOVES

- ✓ Permanent NON-SLIP on all 5 Fingers and Palm. Highly efficient embossed surface is *integral part* of glove
- ✓ Impregnable to ACIDS, CAUSTICS, OILS
- ✓ Curved FINGERS for Comfort and Easy Use

No. 5740-5 LONG GAUNTLET
Length 14", Gauge .030 to .040
Sizes 9, 10, 10 1/2, 11, 12
No. 5720-5 LIGHT DUTY
Length 10 1/2", Gauge .017 to .020
Sizes 7, 7 1/2, 8, 8 1/2, 9, 9 1/2, 10, 11

★ Write for sample and prices

**SEIBERLING
LATEX PRODUCTS CO.**
AKRON 9, OHIO

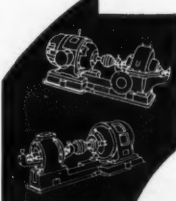
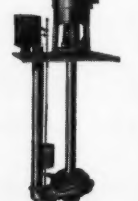
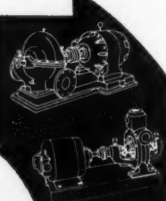
200-5th Ave., New York
Merchandise Mart, Chicago

When inquiring check CP 4711 on handy form, pgs. 2-3

Aurora Vertical Sump Pumps are "TOPS"

HEAVY DUTY
and LIGHT DUTY

ALSO NON-CLOG
SIZES UP TO 8"

PUMPS "by Aurora"

For all sump drainage; liquids handling in industry; transfer of chemical and hot liquids; handling viscous or high temperature liquids; boiler blow-off; heating returns etc.; also for handling screened and un-screened sewage and industrial waste.

Write for
BULLETIN 104
(Heavy Duty & Non Clog)
BULLETIN 103
(Light Duty)

Write TODAY
for
**CONDENSED
CATALOG "M"**

DISTRIBUTORS IN PRINCIPAL CITIES



AURORA
PUMP COMPANY

62 Loucks Street, Aurora, Illinois

When inquiring check CP 4712 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESSING EQUIPMENT

Replacement magnets fit all pipeline separators of 2 to 4" diam . . .

increased magnetic strength due to use of Alnico V

Uses: Replacement magnets for all pipeline trap separators of 2, 2½, 3, and 4" diameter. Prevent passage of tramp iron through pipelines conveying liquids and slurries.

Features: Installation involves merely substitution of new magnetic plate for old one. Magnetic strength is nearly twice that of former magnets due to use of Alnico V. Fine iron contamination can now be efficiently removed.

Description: Replacement unit consists of the magnet casting and the face plate to which it is attached. Magnets of Alnico V are now being employed in all of maker's permanent magnetic equipment.

Source: Development of the Eriez Manufacturing Company, Dept. CP, Erie, Pa. . . or for more information check CP 4713 on handy form, pages 2 and 3.

Positioning of lab equipment easier with "lift" . . .

platform is readily moved up and down by turning of screw-support underneath.

Uses: Positioning of heavy and/or hot laboratory equipment at various levels above workbench.

Features: More stable and easier to operate than previous models or makeshift devices.

Description: Improved Lab-Lift has a platform which can be adjusted to any point from 11½ to 18½" above



Easily positioned platform aids placement of lab equipment

bench — merely by turning a screw-support to which the platform is attached. Heavy kettles, reaction flasks, cold and hot baths and similar vessels are held safely or moved up or down so they can be attached or detached from reaction trains, etc. Both the movable platform and the base have upright cadmium-plated rods.

Source: Product of Fisher Scientific Co., Dept. CP, 717 Forbes St., Pittsburgh 19, Pa. . . or for more information check CP 4714 on handy form, pages 2 and 3.

MAY, 1951

Remember —
the trade marks "tt" and "TUBE-TURN" are applicable only to products of TUBE TURNS, INC.



**Bring on
your severe conditions —**

YOUR FIRST CHOICE for severe service conditions in piping is the TUBE-TURN Welding Neck Flange. It is engineered with a long tapered hub and a smooth transition in thickness to the pipe-end bevel. This means greater pressure-containing capacity under extreme temperature as well as much longer life than other types when repeated pipe bending or severe vibrations are involved.

For other jobs choose from these TUBE-TURN Welding Flanges: slip-on flanges; lap-joint flanges; socket-welding flanges; blind flanges; orifice flanges; pipeline non-standard flanges. Get in touch with your nearby TUBE TURNS' Distributor. You'll find one in every principal city.



Write Dept. 1-5 for free booklet, "Research on the Cyclic Life of Piping Systems."

TUBE TURNS, INC. LOUISVILLE 1, KENTUCKY

DISTRICT OFFICES: New York • Philadelphia • Pittsburgh • Chicago • Houston • Tulsa • San Francisco • Los Angeles
TUBE TURNS OF CANADA LIMITED, CHATHAM, ONTARIO...A wholly owned subsidiary of TUBE TURNS, INC.

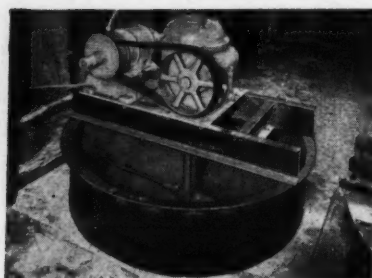
When inquiring check CP 4715 on handy form, pgs. 2-3

"Be sure you see the double tt."

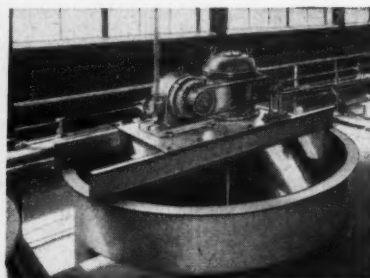


NOTABLE PLANTS PICK **NETTCO**

You'll find Nettco Engineered Agitators serving in many different ways, in many different industries — and always serving efficiently and reliably. People who know agitating equipment know they can count on a Nettco installation to do the job and do it right. We will gladly show you how Nettco standardized components can be combined to give you tops in agitation at reasonable first cost, and at lowest operating cost. Write, giving details on your process requirements, to NEW ENGLAND TANK & TOWER COMPANY, 93 Tileston St., Everett 49, Mass.



Processing animal and fish oils.



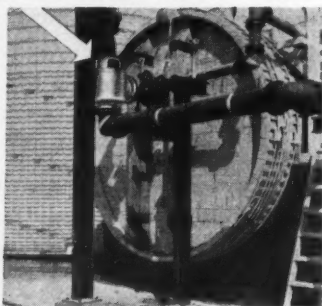
Producing oils, greases.



Manufacturing paint.



Mixing and blending acid.



Mixing fluids in pipeline.

NETTCO *Engineered* **AGITATORS**

When inquiring check CP 4716 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

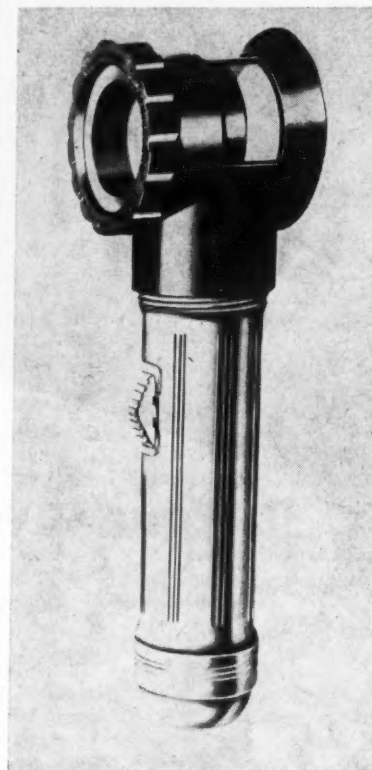
**Light in magnifier
illuminates field to
be examined . . .**

direct rays not thrown into eyes

Uses: For use where speedy and accurate examinations under magnification are desired.

Features: Instrument combines a 7 power magnifying glass with a powerful light, built right into handle. It clearly illuminates the magnified field of vision, without throwing direct rays into user's eyes. It is so easily handled that accurate inspections can be made even in darkest corners. Batteries used are standard dry cells.

Description: In this improved model, a Bausch & Lomb lens system has been incorporated to give a clearer, flatter field of vision and to reduce



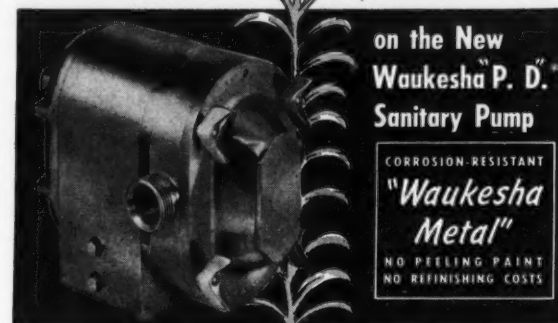
For illuminated magnification

distortion and aberration. Housing for lens system is now made of Bakelite plastic.

Length is about an inch longer than a two-cell flashlight. In addition to the 7 power unit, others are available for 5, 20 and 40 power magnification.

Source: Flash-O-Lens spotlight magnifiers are available from Abbeon Supply Co., Dept. CP, 58-10 41st Drive, Woodside, N. Y. . . . or for more information check CP 4717 on handy form, pages 2 and 3.

No Paint Needed...



on the New
**Waukesha P. D.
Sanitary Pump**

CORROSION-RESISTANT
**"Waukesha
Metal"**
NO PEELING PAINT
NO REFINISHING COSTS

Check these Extra-Value features:

New One-Piece O-RING SANITARY SEALS eliminate TEN former parts — Save cleanup time. Positive Displacement, Twin-Blade Impellers provide Non-Agitating, Non-Aerating Pumping. Heavy Duty Ball Bearings for longer service. New Adjustable Ball Feet with high clearance for easy floor sanitation. New Time Savings in Sanitation — no cracks or crevices inside or outside. Available in V-Belt, GEARHEAD, Reeves, or U. S. Variable Speed models, all with or without the Vented Cover.

*P.D. — Positive Displacement — Slow Speed

Write for the complete story NOW!

**WAUKESHA FOUNDRY
COMPANY**
WAUKESHA, WISCONSIN

Waukesha 100%
SANITARY
PUMPS
Dependable Product of a Responsible Manufacturer

When inquiring check CP 4718 on handy form, pgs. 2-3

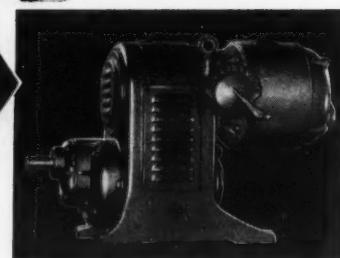


**Good bye
contraptions**

**Good buy
VARIDRIVES**

ALL-IN-ONE:

MOTOR
SPEED CHANGER
GEAR REDUCER



VARIDRIVE

The miracle motor with thousands of speeds. Occupies little more space than ordinary motor. Big dividend earner. 1/4 to 50 h.p. 2 to 10,000 rpm. Request Bulletin.

U.S. ELECTRICAL MOTORS Inc.
Box 2038, Los Angeles 54, Cal. or Milford, Conn.

When inquiring check CP 4719 on handy form, pgs. 2-3



CHEMICAL PROCESSING

PROCESSING EQUIPMENT

Lubricant, sealer properties combined in non-seize pipe thread compound . . .

resists drying out when applied to pipe, bolt and stud threads and gasket faces

Uses: Anti-seize pipe thread compound can be used for steam, gas, water, air, oil, ammonia and similar connections.

Features: Metallic elements, of which 70% is powdered lead, are held in suspension in hydrocarbons. Composition of compound is designed to avoid drying out to insure later disassembly against seizure. No graphite is used.

Description: Metallic compound which combines advantages of a lubricant and sealer. It can be used at temperatures from minus 350°F to plus 2900°F, and even higher. Conforms to Government specifications that have been established.

Source: Armit Laboratories, Dept. CP, 6681 Broad St., Los Angeles, Calif. . . . or for more information check CP 4720 on handy form, pages 2 and 3.

Paint loss from over-spray reduced to minimum by electronic aid . . .

unit charges paint particles as they leave gun so they coat hard-to-reach surfaces

Uses: Accessory for paint spray units. Operates on electrostatic attraction principle which is said to precipitate 95% of the paint spray on the work.

Features: Cuts paint waste to a minimum by reducing over-spray. Helps paint to "reach around corners," and to cover top, bottom and hard-to-get-at places with a smooth, uniform coating . . . often with the spray gun placed in one fixed position. Practically no hand touch-up is required after spraying, states the manufacturer. Operation is very simple, requires less manpower and less ventilation.



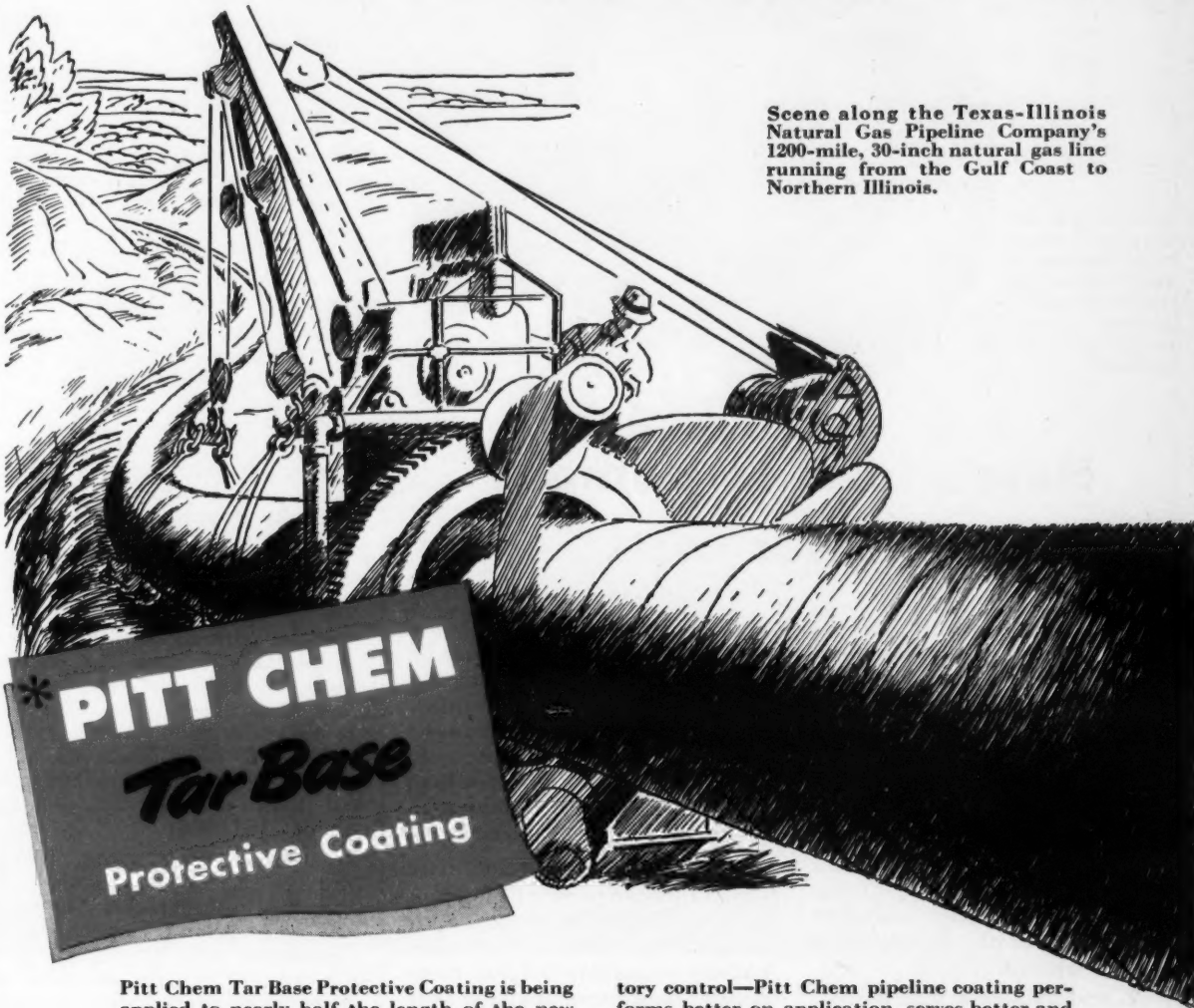
Operating panel of paint spray accessory is at convenient angle

Description: Electronic unit establishes a negative charge on the paint particles as they leave the gun. These charged particles are attracted to the item to be coated which is, according to the manufacturer, at ground potential. The Paint-Miser adapts itself readily to any finishing department; extensive changes in spray booths, plant layout or conveyors are unneeded, as unit is mostly self-contained. The compact power supply unit is contained in a sturdy metal console cabinet with control panel mounted on top at a convenient angle. Overall size is 18 x 18 x 48". Output is 0-100 pkv DC, 4 ma maximum. Input is 110/120 volts, 60 cycles, 500 watts.

Source: Development of Ashdee Products, Inc., Dept. CP, 18029 Dixie Highway, Homewood, Ill. . . . or for more information check CP 4721 on handy form, pages 2 and 3.

*Life-Saving "Skin"**

for another **BIG INCH** pipeline



Scene along the Texas-Illinois Natural Gas Pipeline Company's 1200-mile, 30-inch natural gas line running from the Gulf Coast to Northern Illinois.

Pitt Chem Tar Base Protective Coating is being applied to nearly half the length of the new steel pipeline that will soon carry gas from the Corpus Christi area to Joliet, Ill. It's one of the basic materials of a tough, metal-preserving sheath that will guard against underground corrosion and add years of life to the vital line.

This reinforced tar base coating provides more than just "life insurance" for this \$120,000,000 transportation system. Because of its unvarying top quality—maintained by painstaking labora-

tory control—Pitt Chem pipeline coating performs better on application, serves better and longer underground.

This same *quality-assurance* is an important advantage when you use any of Industry's Most Comprehensive Family of Protective Coatings . . . whether it's a Pitt Chem Alkyd, Chlorinated Rubber, Vinyl or Phenolic base coating. ● For more information about these versatile equipment-savers, send for booklet, "Control Corrosion Through Pitt Chem Protective Coatings."

Protective Coatings Division



**PITTSBURGH
COKE & CHEMICAL CO.**

GRANT BUILDING
PITTSBURGH 19, PA.

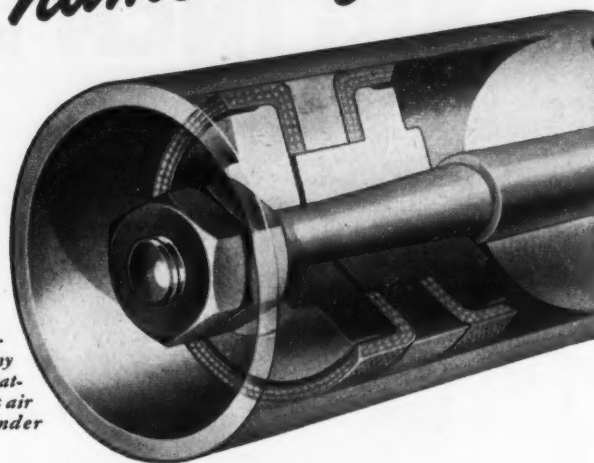
WAD 3591C

OFFICES: NEW YORK • CHICAGO • ST. LOUIS • TULSA • HOUSTON • LOS ANGELES • SAN FRANCISCO

When inquiring check CP 4722 on handy form, pgs. 2-3

You name the fluid...

Phantom cutaway showing typical Pumcup-piston assembly—one of many types for all reciprocating pumps as well as air or hydraulic cylinder mechanisms.



Here's how to pump it at lower cost!

IN thousands of plants, Darcova Pumcups are solving the problem of diminishing pump efficiency, repacking, maintenance, down-time, lost production—the things that really eat up dollars in fluid-handling operations! Here's why...

1. Darcova composition Pumcups not only increase volumetric efficiency, but they keep it high with no appreciable fluid slippage for the entire life of the Pumcups.

2. And, because of their design, composition, and operating principle, Pumcups have *many times the life* of most other types of piston packing.

3. Based on years of application research, Pumcups come in standard and special compositions for exceptional stability in handling almost *any* fluid you can name. For example... strong acids and alkalies, food products and even the most troublesome petroleum derivatives.

Big savings? We'll gladly refer you to Pumcup users whose problems are similar to yours. *They'll* tell you! Meanwhile, send for a free bulletin containing helpful, more detailed information: Bulletin 4401 on Pumcups for reciprocating pumps; Bulletin 4502 on Pumcups for air and hydraulic mechanisms. Just write to...

**DARLING VALVE
and Manufacturing Co.**
WILLIAMSPORT 4, PA.



PUMCUPS

When inquiring check CP 4723 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

Hazardous locations OK for push buttons...

used with motor starters, light circuits, controllers, etc.

Uses: Push buttons for Class 1, Group D hazardous locations. Has been used on motor starters, lighting circuits, controllers, etc.

Features: Equipped with openings for direct conduit entrance from above or below.

Description: May be used as air-break or with contacts oil-immersed. Screwed-on tank forms bottom half, giving quick access to interior. Maker's Bulletin 1105-C gives ratings, dimensions, and complete information on this product.

Source: The Electric Controller & Mfg. Co., Dept. CP, Cleveland 4, O. . . . or for more information check CP 4724 on handy form, pages 2 & 3.

Oils, acids, metal dusts, water kept from contacting worker's hands by creams, lotions...

ease of application and removal, odor and feel are features

Uses: As protection against a variety of materials and working conditions that are causes, or possible causes, of dermatitis. Designed to meet requirements of those exposed to solvents, degreasing agents, cutting oils, glass fiber, dry insecticides, metal dust, acetic acid, alcohol, dilute mineral acids, dry chemicals, coal tar products, and plastics.

Features: Selection of proper cream or liquid, or combination, to meet needs is simplified. Products have been clinically and job tested. Formulation and preparation provide proper viscosity, adherence to skin, ease of removal after use, permeability, favorable color, odor and feel.

Description: Complete selection consists of 6 different types of creams and 4 different liquids. Creams come packed in 8, 12 and 16 oz jars, 12 or 24 jars to a carton; also in 25 lb pails. Liquid preparations are available in pints, gallons and 50 gal drums.

In several automobile plants it was found that use of two types of these preparations met requirements for protection of worker's hands.

Source: "Skin-Cote" creams and liquids are made by Safety Division, Boyer-Campbell Co., Dept. CP, 6540 St. Antoine St., Detroit 2, Mich. . . . or for more information check CP 4725 on handy form, pages 2 and 3.

GAYCO CENTRIFUGAL SEPARATORS

GAYCO Separators, equipped with the adjustable centrifugal sizing fan — an exclusive GAYCO feature — make closer separations. Closer separations bring about higher production through efficient removal of the fines made by the mill. Closer separations bring about higher quality products by eliminating all undesirable oversize.

"TIMKEN BEARING EQUIPPED" GAYCO brings you all these:

Range 60
to 400
mesh

greater
capacity

25 to 30%
greater
production

Cleaner
Tailings

Uniform
Products

Slow speed for
slow wear

Quick and easy
adjustments

If you have an exceptionally hard separating problem, TRY THE GAYCO.



Universal Road Machinery Co.

Robert M. Gay-Division
Factory and Laboratory, Kingston, N. Y.

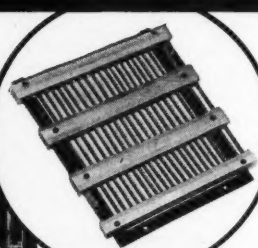
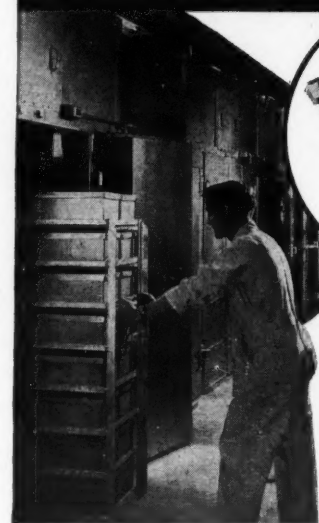
117 LIBERTY STREET

NEW YORK 6, N. Y.

Canadian Representative: F. H. Hopkins & Co., Ltd.,
8500 Decarie Blvd., Montreal, Que.

When inquiring check CP 4726 on handy form, pgs. 2-3

Destination: Korea!



Battery of TRENT electrically heated ovens in which small glass ampoules are dried and sterilized before being filled with penicillin, streptomycin and sulphur drugs, principally for our armed forces.

Heat is produced by TRENT Patented "FOLDED-and-FORMED" Heating Elements, assuring absolute temperature uniformity, with complete freedom from maintenance.

"FOLDED-and-FORMED" Heating Elements are available in standard 12" x 12" racks for easy installation, horizontally or vertically, in multiples to meet any capacity requirement, at temperatures up to 1350°F. Five year guarantee.

TRENT INC.
Electrically Heated Industrial Equipment
235 LEVERINGTON AVE. PHILA 27 PA.

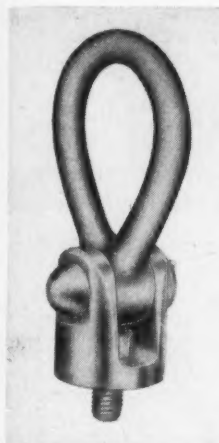
When inquiring check CP 4727 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESSING EQUIPMENT

Eye bolt designed to pivot for carrying more weight . . .

load centering feature imparts additional strength



Uses: Designed to carry weights 10 times heavier than conventional eye bolts.

Features: Great strength is achieved by load-centering design. Eye pivots, permitting weight to center. Installation is simple.

Description: Made of high grade steel, light in weight, and precisely balanced.

Bolts are replaceable. Standard models are available in bolt sizes: $\frac{1}{2}$, $\frac{3}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, and 1", USS threads. Special sizes and SAE threads are made to order.

Source: Robert H. Froom & Co., Dept. CP, 1738 West 81st St., Los Angeles 47, Calif. . . .

or for more information check CP 4728 on handy form, pages 2 and 3.

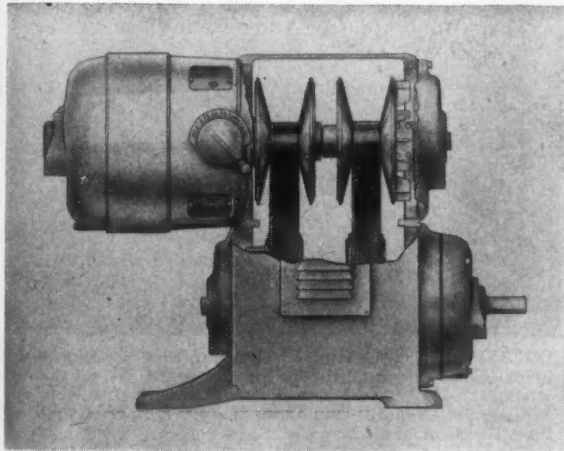
Built-in speed changer uses dual belts to distribute heavy motor loads . . .

tension-controlled belt system is incorporated in motors

Uses: For driving equipment that requires extra heavy duty motors with ratings as high as 50 hp.

Features: Internal speed changing transmission incorporates dual belts, thus distributing the load so that no undue strain is imposed. Tension control is used to counter-balance belt loads.

Description: Autotaut tension control has a calibrated spring to maintain pressure between the two halves of the



Speed varied with control dial

driven varidisks and the sides of the belt. Spring takes up any slack that might be caused by stretch or wear of the belts. This system is said to avoid the disadvantages of variable center drives or extra flexing of belts over idlers. Motor speed is changed by merely turning a control dial.

Source: U. S. Electrical Motors, Inc., Dept. CP, 200 E. Slauson Ave., Los Angeles 54, Calif. . . . or for more information check CP 4729 on handy form, pages 2 and 3.

MAY, 1951

**NO LOOPHOLES
FOR PINHOLES
—the protection
you buy gets
20 rigid inspections**

**MORE
RESISTANT
TO MORE
CHEMICALS**

ACE

**HARD RUBBER
AND PLASTICS**

THERE'S no short-cut to *sure* corrosion protection. Every ACE Rubber lined tank, valve, pump or piping system gets no less than 20 major inspections, developed through 100 years of experience with this finest of corrosion resistant materials.

For instance, every inch of our standard hard rubber lining is given a

35,000 volt brush test—enough voltage to track down any slight, unsuspected weakness up to eight inches away. In another test, a piece from the same batch of rubber, bonded and vulcanized at the same time as the lining, is sent to the ACE laboratory for complete breakdown tests. To be sure of the protection you buy, be sure to specify ACE.

In all types of chemical equipment, ACE hard rubber linings and coverings are available to resist all alkalies, metallic salts, inorganic acids, hydrochloric acid any strength, sulphuric acid to 50° Bé, nitric acid to 16° Bé, phosphoric acid to 75%, and countless other corrosives. Other ACE plastics extend this range still further. Ask for catalogs.

**100th
ANNIVERSARY**

**AMERICAN
HARD RUBBER
COMPANY**

11 MERCER ST. • NEW YORK 13, N. Y.

When inquiring check CP 4730 on handy form, pgs. 2-3



Heating?

Cooling?

**Air
Conditioning?**

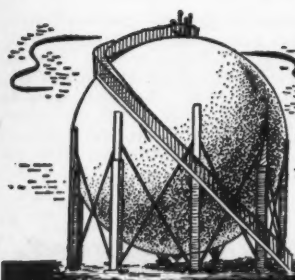
Process?

**Here's How to
Get the RIGHT Answer to your
HEAT-EXCHANGE PROBLEMS**

The right ratio of surfaces—the right materials—the right velocities—the right proportion between coil area and depth . . . there are dozens of factors that affect the efficiency, maintenance and service life of heat-exchange coils.

For best performance in your own application, the practical approach is to take full advantage of the unequalled engineering, research and design skill—the unequalled manufacturing and testing facilities—which Aerofin offers you.

To get the right answer—ask the Aerofin man.



**Throughout the
Chemical Industry—**

**Aerofin units do the job
Better, Faster, Cheaper**

AEROFIN CORPORATION

NEW YORK • BOSTON • CHICAGO • CLEVELAND
DETROIT • PHILADELPHIA • DALLAS • SAN FRANCISCO • TORONTO • MONTREAL

410 South Geddes St.
Syracuse 1, N. Y.

*Aerofin is sold only by manufacturers of nationally
advertised fan system apparatus. List on request.*

When inquiring check CP 4731 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

**Spring gives clean action
to circuit breaker . . .**

avoids excessive burning, arcing

Uses: Plug-in type circuit breaker for lines carrying from 15 to 50 amps.

Features: Strong main operating spring takes action out of the hands of operator once the handle has been moved. Contacts are opened or closed with fast, clean action, avoiding excessive burning or arcing of contacts.

Description: Breaker is tripped by either of 2 impulses. Magnetic action instantly opens breaker in case of short circuit; and thermal action of bi-metal trip element responds to overloads, although harmless temporary overloads are passed. Breaker mechanism trips independently of the handle and cannot be held closed in case of an overload or short. Device is UL-approved.

Source: TQL breaker is made by Trumbull Electric Mfg. Co., Dept. CP, Plainville, Conn. . . or for more information check CP 4732 on handy form, pages 2 and 3.

**Lab and process uses
for vacuum pump . . .**

free air displacement is 2 cfm

Uses: Small vacuum pump for both lab and process applications. Used for lamp and tube manufacturing, backing diffusion pumps, etc.

Features: Weight is only 70 lb.

Description: Compound pump has free air displacement of 2 cfm and produces McLeod Gauge absolute pres-



Vacuum pump moves 2 cfm free air sure readings of 0.1 micron or better. Power unit is 1/4-hp motor. Pumping system is oil-sealed.

Source: Model CVM 3153 is made by Kinney Manufacturing Company, Dept. CP, 3529 Washington St., Boston 30, Mass. . . or for more information check CP 4733 on handy form, pages 2 and 3.

IS VACUUM

That's 99.99% Perfect

good enough for your process?

This degree of vacuum is easily obtained with the Croll-Reynolds four or five-stage steam jet EVAC-TOR, with no moving parts. Each stage from a technical standpoint is as simple as the valve that turns it on. Numerous four-stage units are maintaining industrial vacuum down to 0.2 mm. and less, and many thousands of one, two and three-stage units are maintaining vacuum for intermediate industrial requirements on practically all types of processing equipment.



By permitting water, aqueous solutions or any volatile liquid to evaporate under high vacuum and without heat from an outside source, enough BTU's can be removed to chill the liquid down to 32°F., or even lower in the case of solutions. This is the principle of the Croll-Reynolds "Chill-Vector." Hundreds of these have been installed throughout the United States and in several foreign countries.

An engineering staff of many years experience has specialized on this type of equipment, and is at your service. Why not write today, outlining your vacuum problem.



CROLL-REYNOLDS CO., INC.

17 John Street, New York 38, N. Y.

Chill-Vectors • Steam Jet Evactors • Condensing Equipment

When inquiring check CP 4734 on handy form, pgs. 2-3



LOCKED IN STRENGTH of Tri-Lok open steel flooring gives efficient load distribution, even on long spans. Get maximum strength, light, and air with minimum weight. Available in Rectangular, Diagonal, and Super-Safety U-type Flooring, and Stair Treads of all kinds.

The Tri-Lok Company is also equipped to furnish riveted and Tri-Forge welded open steel flooring. Tri-Lok gratings can be furnished in a variety of metals, including aluminum alloy, stainless steel, etc. Write for Bulletin MT1140.

DRAVO CORPORATION

National Distributor for the Tri-Lok Company

Dravo Building, Pittsburgh 22, Pennsylvania

Sales Representatives in Principal Cities



When inquiring check CP 4735 on handy form, pgs. 2-3

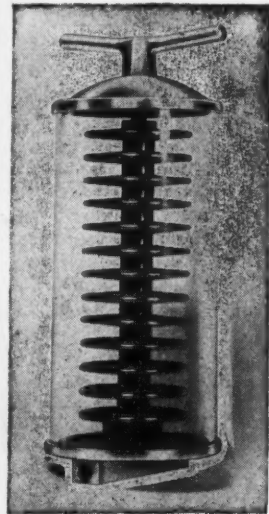
CHEMICAL PROCESSING

Operators watch filter's action through glass container . . .

elements of stainless steel are extremely compact
Uses: Especially useful in research and development work, and in commercial applications where influent suspensions tend to have variable properties.

Features: Porous stainless steel filter elements, in glass walled containers, permit full observation of filter action.

Description: Glass walled filter has a septum fabricated from porous stainless steel sheet, having a percentage of voids of 50%, with pore openings of closely controlled size, and in pore sizes ranging between 5 microns (.002") at the fine end to 165 microns (.065") at the coarse end. Filter elements are of extremely compact construction, and as much as 8 sq ft of filter area may be contained in a transparent body 4 1/2" in diameter and 40" long.



Glass walled filter

Solid parts and porous medium are made of stainless steel or other corrosion resistant alloy, according to order. Pyrex glass is used to provide heat and pressure resistance.

Maker provides an integral stainless steel guard screen

surrounding the glass body for those applications involving pressures higher than about 40 psi as a protection against the possible hazard of damage due to shattered glass.

Source: Micro Metallic Corp., Dept. CP, 30 Sea Cliff Ave., Glen Cove, N. Y. . . . or for more information check CP 4736 on handy form, pages 2 and 3.

Use knee-action rotor arm to give selector switch low contact resistance . . .

arm also permits 6 poles, 15 positions per pole, on each deck; compactness is stressed

Uses: As selector switch.

Features: Switch has "knee-action" type of rotor arm. "Knee-action" insures low contact resistance and uniform contact pressure throughout life of switch.

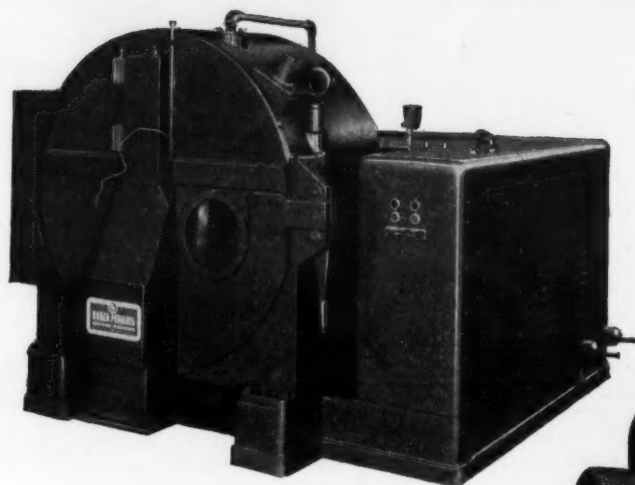
Description: Rotary selector switches are available with up to 6 poles, 15 positions per pole, on each deck, made possible by the "knee action" type of rotor arm. Silver alloy contacts and rotor arms are used on all units.

Because of the great number of pole decks available, a greater degree of compactness is obtained than previously possible. This is in line with present trend toward small size equipment. Roller-type detent is also standard on all units. This detent gives more positive action and longer life than before.

Source: Daven Co., Dept. CP, 191 Central Ave., Newark 4, N. J. . . . or for more information check CP 4737 on handy form, pages 2 and 3.

MAY, 1951

THREE NEW BAKER PERKINS MACHINES FOR BETTER CHEMICAL PROCESSING

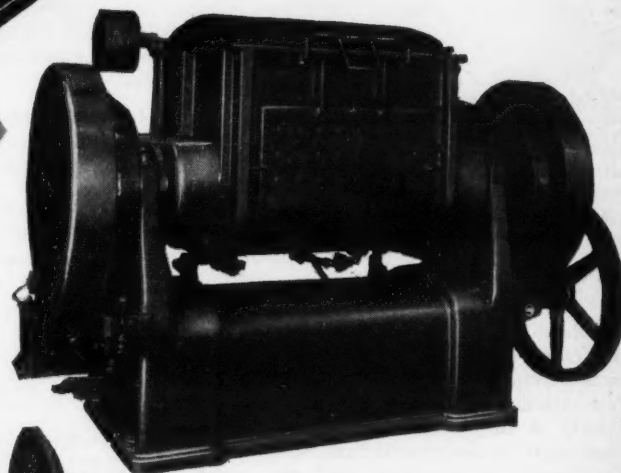


TYPE HS-36 BAKER PERKINS "ter meer" UNIVERSAL CENTRIFUGAL for filtering solid-liquid slurries.

- Capacity — 4500 lbs. per hr. (Dependent on material)
- Drum speed 1000 x G.
- Drum diameter — 36 inches
- 20 HP Single Motor Drive
- Construction as desired . . . alloy, rubber lined or iron and steel. Either fume or vapor tight.
- Fully automatic with cycle controller that handles every centrifugation cycle.

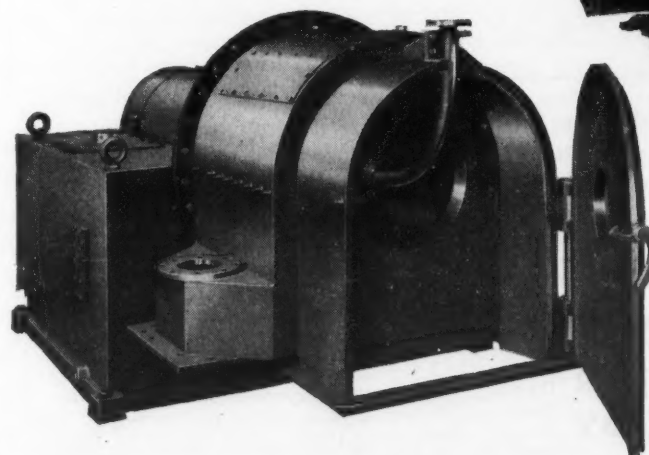
SIZE 16 JYEM2 UNIVERSAL MIXING AND KNEADING MACHINE for wide variety of chemical processing operations.

- Capacity 150 gallon working, 225 gal. total
- Sigma-type blades of cast steel
- 50 HP single motor drive
- Trough of fabricated steel jacketed for 80 lb. steam pressure.
- Vaulted, hinged and counterbalanced vapor-tight cover with quick opening clamp



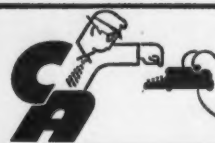
SIZE S-15 BAKER PERKINS "ter meer" CONTINUOUS CENTRIFUGAL for centrifugation of free draining crystalline, granular and fibrous materials of all types.

- Capacity — 6000 lbs. per hr. (Dependent on material)
- Drum speed — 450 X G Constant speed
- 20 HP single motor drive
- Drum diameter 15 inches
- Operates with continuous feed and discharge
- Lower Power input.



BAKER PERKINS INC., CHEMICAL MACHINERY DIVISION, SAGINAW, MICHIGAN

When inquiring check CP 4738 on handy form, pgs. 2-3



Technical Topics

MAGNETISM IN AUSTENITIC STAINLESS STEEL

NORMAN S. MOTT
Chief Chemist and Metallurgist

IN THE normal specification range for the 18-8 chromium-nickel stainless steels, especially when the carbon is low, ferrite and the resultant magnetism will often be found. It must not be construed, however, that this condition is detrimental to the properties of stainless steel; in fact, in many cases it is highly desirable.

The fully austenitic stainless steels, when heated in the carbide precipitation range (900-1600° F.) have their carbon precipitated as chromium carbide along the grain boundaries. This depletes the boundaries of chromium with the result that the alloy becomes susceptible to intergranular corrosion.

When alloys containing amounts of ferrite from 5-15% are heated in this temperature range, it is found that carbides tend to form predominantly in the ferrite areas. Since these areas are disconnected and well distributed, the condition does not promote intergranular corrosion.

Stainless steels with free ferrite up to 30% in amount retain good mechanical properties, although they show a slight decrease in ductility and toughness. Their strength and hardness are increased.

Estimation of the presence and approximate amount of ferrite may be accomplished by the use of a phase diagram based upon nickel and chromium equivalent values.*

The nickel and chromium equivalent values are computed by the equations:

$$\begin{aligned} \text{Ni}^e &= \text{Ni}\% + 0.5 \text{ Mn}\% + 30 \text{ C}\% \\ \text{Cr}^e &= \text{Cr}\% + \text{Mo}\% + \\ &\quad 1.5 \text{ Si}\% + 0.5 \text{ Cb}\% \end{aligned}$$

The boundary line between fully austenitic alloys and those which contain ferrite is expressed by the equation:

$$\text{Ni}^e = \frac{(\text{Cr}^e - 16)^2}{12} + 12$$

When a higher percentage of nickel is specified in type 316 moly bearing alloys in order to make them completely austenitic in structure, they become susceptible to intergranular corrosion, and if they are to be heated in the carbide precipitation range, as would occur during welding, additions of columbium are required to counteract this susceptibility.

Molybdenum additions to 18-8 stainless make the alloy magnetic due to the formation of ferrite, and existing data have shown that the presence of this ferrite does not interfere with the high corrosion resistance of the alloy. In this form, it enjoys a wide range of usage where excellent resistance to corrosive media and the effects of welding heat are required.

*A. L. Schaeffler, Metal Progress, November, 1949, p. 680-B.

Available on Request

Copies of this article, printed on heavy stock and in form convenient for filing, will gladly be sent to you, without obligation, in small quantities. You will find this excellent for answering problems that arise concerning the subject of magnetism in stainless steel. Address your requests to Publicity Dept., The Cooper Alloy Foundry Co., Hillside 5, N. J.



Stainless Steel
VALVES • FITTINGS • CASTINGS

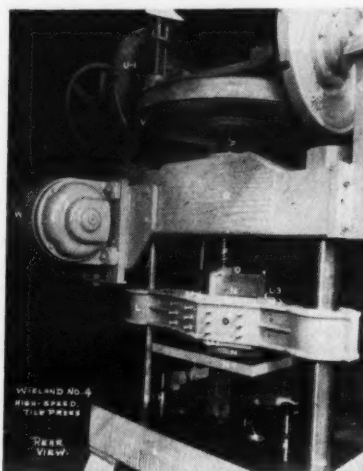
PROCESSING EQUIPMENT

**Pressing tile at 300 sq ft/hr
imposes no maintenance
problem on press...**

75 tons evenly distributed to all parts of forming die

Uses: Seventy-five-ton tile press (illustrated) has four-cavity die setup that can handle 10 manually fed tile pressing operations per minute, or 300 square feet of tile per hour in normal daily production schedules.

Features: Continuous high-speed performance over long periods is ac-



75-ton tile press

complished with a minimum of maintenance.

Description: Tile press is powered by a drip-proof, 5-hp, 1200 rpm motor, equipped with double-shielded ball bearings lubricated for life.

Supporting framework of press provides absolute rigidity and assures alignment of all parts. Cross bar carrying ejector rods is designed to swing horizontally on a center pivot to facilitate removal of ejector rods for die change. Ram design assures even, high pressure to all parts of forming die.

Source: Development of the John Wieland & Son Machine Shop, Dept. CP, 353 North Avenue 23, Los Angeles 31, Calif. . . . or for more information check CP 4740 on handy form, pages 2 and 3.

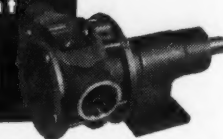
Resistance to corrosion is feature of fittings

Corrosion-resistant fittings are described in 8-page bulletin. "Speed-line Fittings" is issued by Horace T. Potts Company, Dept. CP, Erie Ave. & D St., Philadelphia 34, Pa. When inquiring specify CP 4741 on handy form, pages 2 and 3.

**For pumping acids, caustics, slurries,
viscous liquids, specify...**

JABSCO Corrosion Resistant PUMPS

Patented
and Pats.
Pend.



SELF PRIMING. Obtains vacuum in excess of 26".

VERSATILE. Handles variety of liquids and slurries at wide range of speeds.

SAFE. Self-priming feature permits cleaner, safer, more accessible installations.

SIMPLE. Easily and quickly disassembled for cleaning.

TROUBLE FREE. Impeller lubricated by liquid pumped. No oil or grease cups. No packing. No metal to metal contact of moving parts. Ball Bearings.

MORE CAPACITY for its size and price than any other type of pump. Capacities up to 56 GPM.

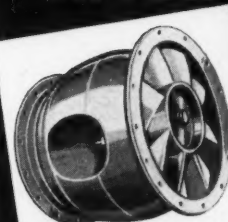
FLEXIBLE IMPELLER. Odorless, tasteless, non-toxic corrosion resistant neoprene—also gum rubber if specified.

Stainless Steel Models available in 3/4", 1", 1 1/2" port sizes.
Bronze Models available in 1/4" up to 1 1/4" port sizes.
Cast Iron Models available in 1", 1 1/4" port sizes.

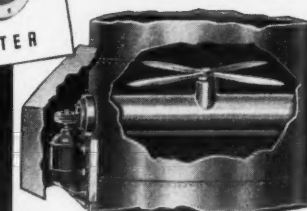
JABSCO PUMP COMPANY
2031 LINCOLN STREET • BURBANK, CALIFORNIA

When inquiring check CP 4742 on handy form, pgs. 2-3

Solve your Ventilating Problems with INTERNATIONAL DUCT BOOSTERS STACK FANS AND BLOWERS



DUCT BOOSTER



STACK FAN

If you have a problem of forced draft or ventilation, send for descriptive literature showing typical installations in ships and industrial plants, apartment houses and public buildings.

ASK FOR BULLETIN No. 109

INTERNATIONAL ENGINEERING, INC.

DAYTON 1, OHIO

NEW YORK — 15 PARK ROW

CHICAGO — 407 S. DEARBORN ST.

When inquiring check CP 4743 on handy form, pgs. 2-3

CHEMICAL PROCESSING

When inquiring check CP 4739 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

Use of turbulent thin films in continuous evaporator speeds process . . .

actual time-at-temperature is usually less than one minute, including cooling of concentrated material

Uses: Evaporators employing the principle of concentration from a turbulent thin film.

Features: Concentration is accomplished continuously in a single pass requiring very little time. Rapid concentration at minimum temperatures gives finished products superior qualities. Especially marked advantages are found in heat-sensitive materials.

Description: Evaporator consists of a vertical tube, the lower portion of which is surrounded by a heating jacket. Upper part of tube is not heated, and is enlarged to assist in knocking out any droplets entrained in vapors. A rotor is fitted coaxially over almost the entire length of the tube and its extended blades reach within about 1/32" of the heated walls.

Liquid to be concentrated enters and is immediately picked up by the rotating blades which throw it against wall of the tube, forming a thin film. This film then flows by gravity, becoming concentrated as it passes through the heated zone. Evaporation takes place rapidly and uniformly in a continuous curvilinear flow of the liquid from top to bottom.

Action of blades not only maintains the film but also helps keep it in a continual turbulent motion which prevents localized over-heating. Because of this method of operation, only a comparatively small amount of the material to be concentrated is contained in the tube at any time. Actual time-at-temperature is usually less than one minute.

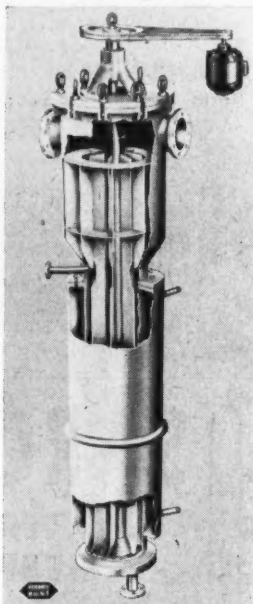
Evaporation is ordinarily carried out under vacuum, the concentration temperature being a direct function of this pressure. Since temperature can be preselected and adjusted, any advance effect of exposing a heat-sensitive material to elevated temperature will be greatly minimized. As a result, aromatic and other important substances can be retained to a high degree.

Froth which may be carried up with the hot vapors is projected against the walls of the separator portion of the machine by the blades; intermediate deflectors cause it to run back into concentrating zone. It is thus possible to handle liquids with large amounts of foam.

Comparatively little floor space is required for these units. They are available in stainless steel with various capacities to 2500 pounds of water evaporation per hour. Larger capacities can be secured by arranging individual units in parallel (ordinarily to the same auxiliaries), and they can also be operated in series to reduce heating requirements.

Source: Turba-Film evaporators are products of Rodney Hunt Machine Co., Dept. CP, Orange, Mass. . . or for more information check CP 4744 on handy form, pages 2 and 3.

MAY, 1951



Showing components
of evaporator

designers . . .

for long-term exposure at 650 F. to 850 F.

take a Closer Look
at
**MECHANICAL
PROPERTIES**

In apparatus where tubing must
withstand high internal pressures at elevated
temperatures, *mechanical properties* of the tubing-steel
are important determinants of wall-thickness and size.

Evidently, any lasting improvement in the physical
properties of a given steel will allow the designer a greater
latitude in the selection of tubing, with
possible advantages in the reduction of weight and cost.

Croloys 21 1/4, 5, and 7 have long been popular
in the fully annealed state for normal
service conditions up to 1250 F. Now it is
established by recent B&W tests that the *increased*
mechanical strength obtained by normalizing and tempering
these alloys is substantially unaffected by long-term
exposure to temperatures up to 650 F.; and that Croloys 5
and 7 maintain these improved properties
even at temperatures up to 850 F.

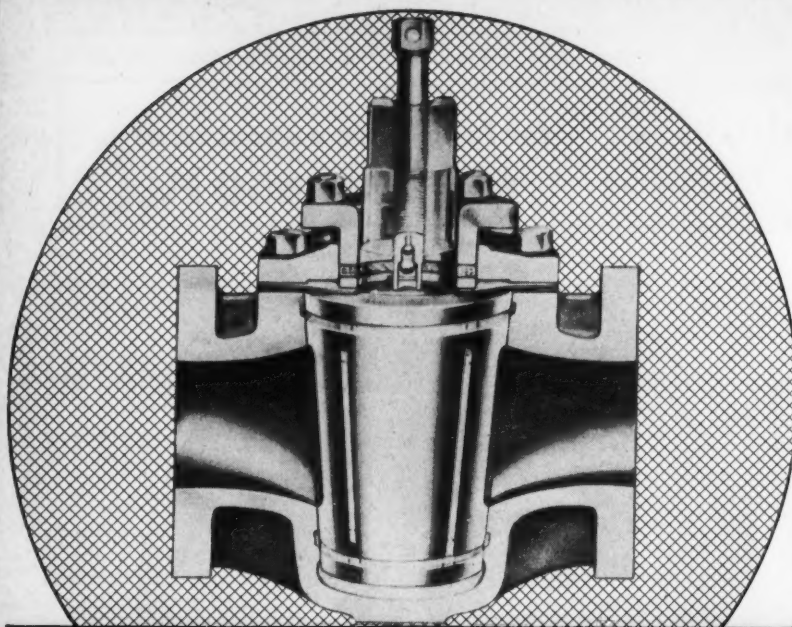
Complete details of the tests are covered by
Alloy Letter No. 265, available on request.

THE BABCOCK & WILCOX TUBE COMPANY
Executive Offices: Beaver Falls, Pa.
General Offices & Plants
Beaver Falls, Pa.—Seamless Tubing; Welded Stainless Steel Tubing
Alliance, Ohio—Welded Carbon Steel Tubing

B&W
SEAMLESS and WELDED
TUBES

Sales Offices: Beaver Falls, Pa. • Boston 16, Mass. • Chicago 3, Ill. • Cleveland 14, Ohio • Denver, Colo.
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St. Louis 1, Mo. • San Francisco 3, Calif. • Syracuse 2, N. Y. • Toronto, Ontario • Tulsa 3, Okla.

When inquiring check CP 4745 on handy form, pgs. 2-3



The most *Saving* of all chemical valves

HOW TO SAVE 8 WAYS WITH NORDSTROM VALVES

- 1 SAVE SHUTDOWNS**—Reduce flow line interruptions to a minimum. High resistance of Nordstrom valves to corrosion and erosion assures continuous operation.
- 2 SAVE PRODUCT LOSSES**—Tapered plug with "Sealport" lubrication insures against leaks.
- 3 SAVE REPLACEMENTS**—Nordstrom valves guarantee longest life because seat is forever protected. Destructive abrasion does not occur at seat.
- 4 SAVE OPERATING EFFORT**—A quarter-turn fully opens or closes a Nordstrom. No hammer-blow or seat forcing necessary. Plug can be hydraulically jacked if ever too tight.
- 5 SAVE TIME**—You can close a Nordstrom in least time—moments against minutes. Power operated by hydraulic-pneumatic cylinder or electric motor if desired. Automatic lubrication with Hypermatic lubricant reduces maintenance to a minimum.
- 6 SAVE SPACE**—Nordstroms do not require overhanging yokes. Least cubical dimensions. Can be set in line where space is at a premium.
- 7 SAVE REPAIRS**—Positively the most enduring of all valves for processing services as well as for oil and gas, as proved by records of low repair part costs over many years.
- 8 SAVE PIPING**—You can install Nordstrom Multiport valves on your switching lines for 3 or 4-way control.

Nordstrom
LUBRICATED VALVES

ROCKWELL MANUFACTURING COMPANY

400 N. Lexington Avenue, Pittsburgh 8, Pa.

Offices in all principal cities.

When inquiring check CP 4746 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

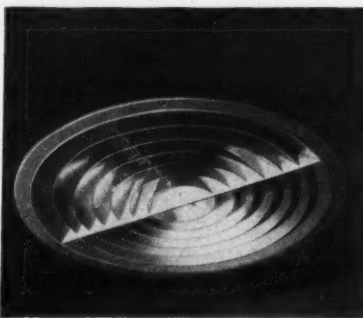
Announces line of high-pressure air diffusers . . .

for distribution system where air moves at 5000 fpm under 6" WG

Uses: Diffusers for use on air distribution systems which carry air at velocities up to 5000 fpm and static pressures up to 6" water gauge.

Features: Temperature differentials as high as 30°F between primary (make-up) air and room air can be handled; only limit is dew point.

Description: Type HPW-1 high-pressure aspirating air diffuser induces room air, mixes it with the primary



High-pressure, aspirating air diffuser

air in approximately equal proportions, and discharges the mixture through an aspirating air diffuser. Air volume can be manually or automatically controlled. Control valve and sound trap are capable of attenuating duct noise from 90 decibels on the high-pressure side to 40 decibels on the low-pressure side, all with a background sound level of 30 decibels.

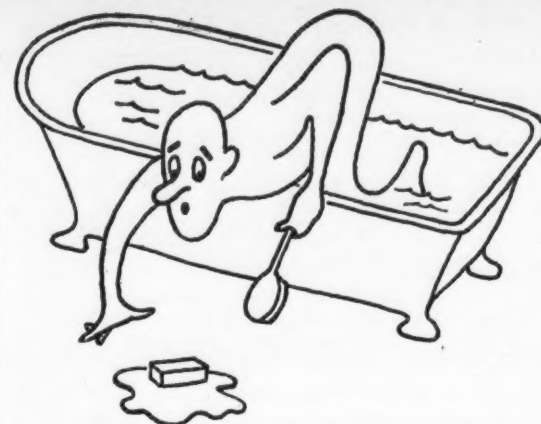
Maximum resistance through valve, induction jets, sound trap, pre-induction chamber, and aspirating air diffuser does not exceed $\frac{3}{4}$ to 1" water gauge for 1:1 ratio. Units are available in three sizes:

| Unit No. | Neck Area, sq. in. | Primary Air Capacity, cfm |
|----------|--------------------|---------------------------|
| 15 | 32.81 | 80-170 @ .5-2.35" WG |
| 17 1/2 | 42.75 | 105-222 @ .68-3.1" WG |
| 20 | 60.00 | 145-312 @ .7-3.2" WG |

Source: Development of Anemostat Corporation of America, Dept. CP, 10 E. 39th St., New York, N. Y. . . . or for more information check CP 4747 on handy form, pages 2 and 3.

Fabrication facilities

Four-page folder describes facilities for fabricating metal and electrical components. Form 100-3-51 is issued by A. L. Smith Iron Company, Dept. CP, 217-233 Everett Ave., Chelsea 50, Mass. When inquiring specify CP 4748 on handy form, pages 2 and 3.



WHAT one fluid-straining method guarantees . . . you never have to stop the flow to clean the strainer?

ANSWER: Cuno AUTO-KLEAN is cleanable (by hand or automatically) while it continues to strain the fluid.

For free bulletin on all-metal disc-type AUTO-KLEAN, address Cuno Engineering Corp., 168 South Vine Street, Meriden, Connecticut.

CUNO
Fluid Conditioning
Removes More Sizes of Solids from More Types of Fluids

When inquiring check CP 4749 on handy form, pgs. 2-3

SARCO WATER BLENDERS



A 3-way mixing valve which provides any set temperature regardless of the incoming hot or cold water pressures and temperatures. Used for washrooms, process work and engine jacket cooling. Several types available; sizes $\frac{1}{2}$ " to 4". Cat. No. 800.

292

SARCO
SAVES STEAM

IMPROVES PRODUCT QUALITY AND OUTPUT

SARCO COMPANY, INC.

Represented in Principal Cities

Empire State Building, New York 1, N. Y.

SARCO CANADA, LTD., TORONTO 5, ONTARIO

When inquiring check CP 4750 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESSING EQUIPMENT

High voltage components of power supply work in oil . . .

corona reduced to absolute minimum, giving unit capacity for unusually rugged service

Uses: For power supply applications where requirements involve ratings from 0 to 100 kv dc, 1 milliamper. Currently being used for following applications: as deflector plate of a cyclotron; for charging capacitors for high speed X-ray photography; on electron microscopes; in high voltage vacuum tube research and development; in high voltage capacitor development and research; for general high voltage insulation breakdown testing; for electrostatic paint depositing and flocking; and in electrostatic dust precipitation.

Features: Embodies a rectified 60 cycle power supply, with all of the high voltage components operating in transformer oil. This reduces corona to an absolute minimum, and renders the power supply unusually reliable and rugged.

Compact power supply 0-100 kv dc; 1 ma

Optional features include reversible polarity, a dual range output kilovoltmeter and/or load current meter; and interlocks to insure application of high voltage with output control turned to zero. If desired, 4" neoprene-tired swivel casters may be provided so that high voltage tank may be easily moved.

Description: Described as the first low-cost power supply of this voltage rating in compact size made available as a catalog item.

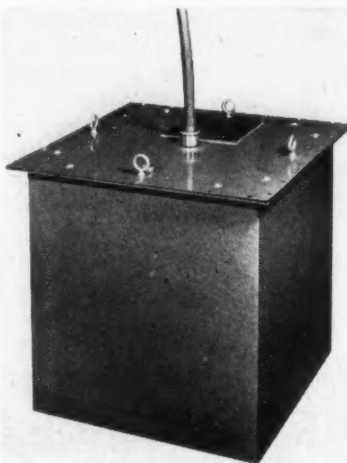
Steel tank housing high voltage components is approximately a 23" cube. Separate 10" high control panel is provided, designed to mount in a standard relay rack or desk cabinet. At 100 kv and 1 ma, ripple is less than 1/2%. The inherent internal resistance is of the order of 8 megohms. Prototypes of this power supply have been in research and industrial applications for over three years.

Standard equipment provided with power supply includes automatic output shorting mechanism that shorts the high voltage to ground as soon as power supply is de-energized; provision for external interlocks; an overload protection circuit; an output kilovoltmeter; and a covat current meter (continuously variable auto-transformer — variac, powerstat, etc). Standard model provides fixed high voltage polarity, either positive or negative as desired.

This unit can also be obtained modified so that output voltage is automatically regulated to within plus or minus 1 kv over the entire operating range. The stability is against line voltage changes from 90 to 135 volts, and load current changes from zero to 2 milliamperes.

Source: Model 217 power supply is built by Beta Electric Corp., Dept. CP, 333 East 103rd St., New York 29, N. Y. . . . or for more information check CP 4751 on handy form, pages 2 and 3.

MAY, 1951



where corrosion hits hardest...



DURCO
CORROSION RESISTING
ALLOYS & EQUIPMENT

...the "one-track" minds at

go after it full-speed-ahead

There are times when nothing beats a "one-track" mind. When you come up against a corrosives-handling problem, for instance, you'll get quickest help from a specialist—a company whose only reason for being in business is to tackle the toughest corrosion problems that industry encounters. That's Duriron.

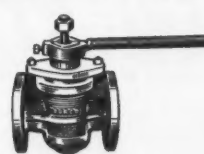
Duriron has created a great variety of corrosion-resisting alloys. From these alloys we make a great variety

of corrosion-resisting equipment. Nowhere in America are the variety of alloys and the variety of equipment so great. Nowhere in America will you find so great a concentration of men, machines, and materials solving the single problem of corrosives-handling so effectively and with such great dispatch.

Wherever and whenever corrosion strikes hardest, notify Duriron. Representatives in 34 cities await your call.



The Duriron Company, Inc., Dayton, Ohio



DURCO products include PUMPS, VALVES, EXHAUST FANS, STEAM JETS

When inquiring check CP 4752 on handy form, pgs. 2-3

FOR PERFECT SEALING AT THE LOWEST COST

Specify DURAMETALLIC PACKINGS



DURAMETALLIC CORPORATION, Kalamazoo, Michigan
Sales and Service Offices Thruout the United States and Canada

When inquiring check CP 4753 on handy form, pgs. 2-3

GET YOUR

Filter Facts
STRAIGHT

Despite claims for other filter types as to better filtering rates, faster operation, easier cleaning, etc., the facts prove the filter press a better overall investment, doing its consistently good job in more places on a greater variety of products under a broader range of operating conditions than any other filtering equipment ever developed. That's worth thinking about.

STRAIGHT FACTS ON SHRIVER FILTER PRESSES

- Lowest in cost per square foot of filtering area.
- Versatile—can be used on any filterable material, no matter how heavy, thick or viscous.
- Recovers solids — reasonably dry, firm, easy to handle.
- Clarifies perfectly, decolorizes, deodorizes, germproofs.
- Washes, extracts, to recover or remove soluble contents. Steams, melts or redissolves cake.
- Designed in any capacity, for any temperature and any pressure up to 1000 p.s.i.
- Made of any metal, wood, rubber, plastic for use with any filter media.

Shriver Filter Presses

T. SHRIVER & CO., Inc.
846 Hamilton St.
Harrison, N. J.

- ☐ Send me "Filter Facts" regularly.
- ☐ Send me the Shriver Catalog.

Name.....
Title.....
Firm.....
Address.....
City.....Zone.....State.....

When inquiring check CP 4754 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

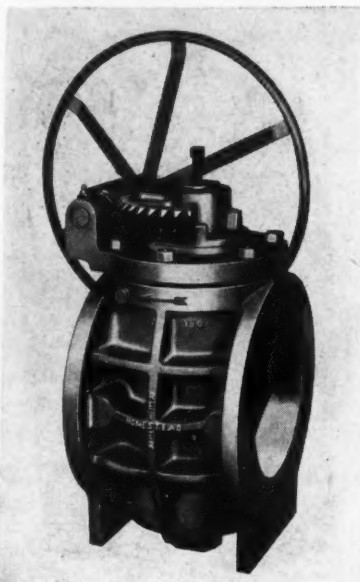
Worm & gear operated models now added to valve line . . .

full-port type 8, 10, 12" sizes, venturi type to 14"

Uses: Hand wheel operated gate valves for 8, 10 and 12" pipelines.

Features: "Self-sealed" construction; port area equivalent to 100% of area of standard pipe.

Description: Worm and gear operated valves, made in 8, 10, and 12" sizes, cast in semi-steel are full-port type, designated as Figure 562 GW. Also made in venturi type,



Made in 8, 10, and 12" sizes

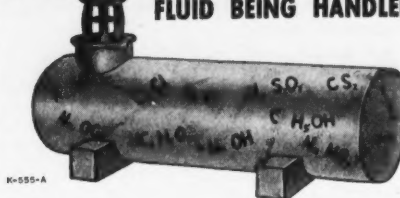
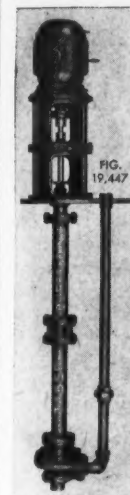
sizes up to 14". In the venturi type, these valves will have face-to-face dimensions identical to those of like-sized series 15 wedge gate valves of this manufacturer. These are identified as Fig. 512 GW for semi-steel, and Fig. 572 GW for steel. Reference Book 39-5 is available on request.

Source: Homestead Valve Mfg. Co., Dept. CP, P. O. Box 550, Coraopolis, Pa. . . . or for more information check CP 4755 on handy form, pages 2 and 3.

Explains how refacing salvages equipment

Four-page publication shows how refacing worn equipment can salvage it from discard. "Welding News", No. 47, 1st Quarter, is issued by Ampco Metal, Inc., Dept. CP, 1745 S. 38th St., Milwaukee 46, Wis. When inquiring specify CP 4756 on handy form, pages 2 and 3.

STUFFING BOX ABOVE THE FLUID BEING HANDLED



Repacking interruptions are reduced to an inconsiderable minimum . . . by locating the stuffing box away from fluid being handled. Liberal size bearings and oversize shafts retard vibration and extend the useful life of these Taber Vertical Pumps.

Oleum, concentrated sulphuric, mixed acids and similar liquids, are well within the handling range of Taber Vertical Pumps. Pump can be furnished in all grades of nickel chrome alloys, iron, bronze or carbon steel . . . whichever customer has found most suitable.

Write for Complete BULLETIN V-837

Please use your business stationery. Taber Pump Co.
Est. 1859 320 Elm St., Buffalo 3, N. Y.

TABER HIGHER PRACTICAL PERFORMANCE PUMPS

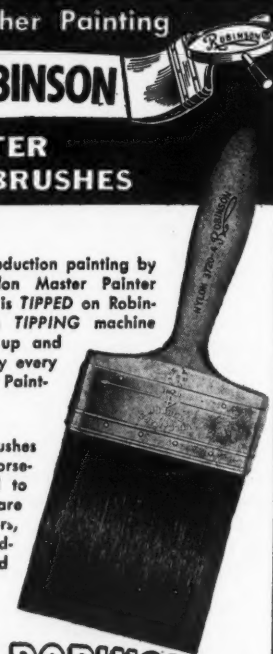
When inquiring check CP 4757 on handy form, pgs. 2-3

For Faster, Smoother Painting

EDWARD E. ROBINSON MASTER PAINTER BRUSHES

SPEED up maintenance or production painting by using Robinson's **TIPPED** nylon Master Painter Brushes. Every nylon filament is **TIPPED** on Robinson's newly developed nylon **TIPPING** machine assuring superior paint pick up and smoother, faster lay down by every Robinson **TIPPED** Nylon Master Painter brush.

Robinson's Master Painter Brushes made of Pure Bristle, Bristle-horse-hair, or **TIPPED** Nylon, mixed to performance proved formulas are available through Distributors, Paint and Oil Dealers and Hardware stores. Catalogue mailed on request.



EDWARD E. ROBINSON
INCORPORATED
95 PARK AVENUE • NUTLEY 10, N. J.

When inquiring check CP 4758 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESSING EQUIPMENT

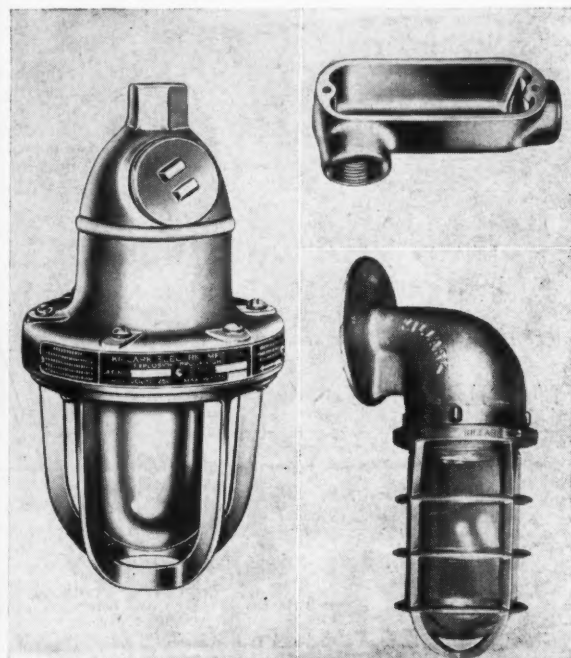
Line of fittings and fixtures designed for applications in petroleum field . . .

fittings are aluminum alloy; fixtures are available in vapor-tight or explosion-proof forms

Uses: Line of fittings and electrical fixtures. Design is specially suitable for application in the petroleum and chemical processing fields.

Features: Line is well-engineered for its individual applications.

Description: Fittings are aluminum alloy, die cast, and weighing 40% less than iron fittings. They resist corrosion and rust and have been rigorously lab tested. Fixtures are



Left, explosion-proof fixture; right top, aluminum fitting; right bottom, vapor-tight fixture. Main applications are in petroleum and chemical process fields

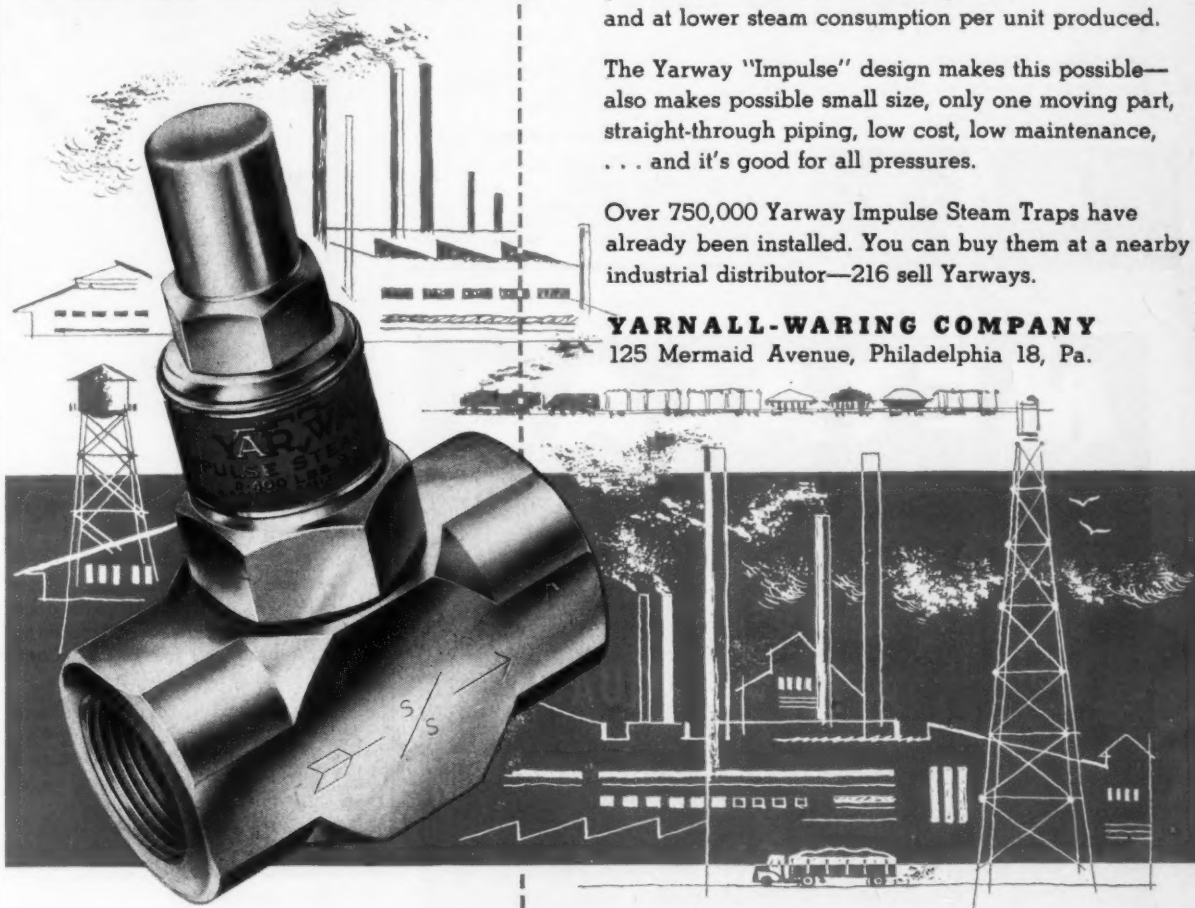
available in vapor-tight and explosion-proof models. Vapor-tight style is also of aluminum alloy, designed for lights. Reflectors are available in shallow bowl, standard dome, or angle styles. Explosion-proof model is corrosion-resistant cast metal sprayed with lacquer. Hub contains 5 full, clean threads, internal or external, for receiving rigid conduit required by code.

Source: Killark Electric Manufacturing Company, Dept. CP, Vandeventer and Easton Aves., St. Louis 13, Mo. . . or for more information check CP 4759 on handy form, pages 2 and 3.

Presents full line of jacks — ratchet, screw, hydraulic

Illustrated 16-page catalog describes complete line of ratchet, screw, and hydraulic jacks in capacities from 3 to 75 tons. Catalog includes indexing by model and by industry, selection table, application pictures, recommended uses, special features, and detailed specifications. Catalog 1515 is issued by The Buda Company, Dept. CP, Harvey, Ill. When inquiring specify CP 4760 on handy form, pages 2 and 3.

PRODUCE MORE WITH YARWAYS..



Is higher production your aim?

Then Yarway is your steam trap. Best steam trap performance requires condensate drainage *plus*—

1. Air and gas removal.
2. Velocity scrubbing of condensate from heat transfer surfaces.
3. Keeping highest average temperature in the equipment.

Yarway Impulse Steam Traps do all this, sending the most premium B.T.U.'s at top temperature into your process or product.

That's why equipment drained with Yarways gets "hotter, sooner" . . . why better quality and higher production rates are so often reported, and at lower steam consumption per unit produced.

The Yarway "Impulse" design makes this possible—also makes possible small size, only one moving part, straight-through piping, low cost, low maintenance, . . . and it's good for all pressures.

Over 750,000 Yarway Impulse Steam Traps have already been installed. You can buy them at a nearby industrial distributor—216 sell Yarways.

YARNALL-WARING COMPANY
125 Mermaid Avenue, Philadelphia 18, Pa.

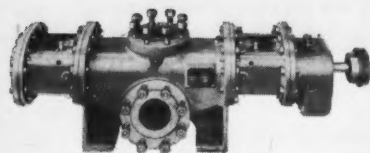
FREE OFFER

Don't take our word for it. Test Yarway's production advantages in your own plant, without cost or obligation. Drop us a card. A trial trap will be delivered promptly.

YARWAY the steam trap
designed with production
in mind

When inquiring check CP 4761 on handy form, pgs. 2-3

PUMP COAL TAR, ACETATE, CELLULOSICS?



The NEW Sier-Bath External Gear & Bearing Bracket Type SCREW PUMP

Capacities: 1-700 GPM
Discharge: 1000 PSI for viscous liquids
300 PSI for water

provides greater dependability, longer life—costs less to service and maintain

NEW FEATURES:

Single-point Alignment. Just one support point—base of pump body. External housings bolted directly to pump body, thus eliminating bearing strain and rotor misalignment due to change of position of pump elements.

"Dual-controlled" rotors for less wear on bearings and timing gears. Axial control by heavy-duty thrust bearings—radial control by precision cut timing gears and heavy-duty roller bearings.

Faster Servicing—gear housings center line supported, doweled for accurate alignment. All parts automatically positioned by shoulders and locknuts.

ADDITIONAL ADVANTAGES:

Less Strain on Valves and Piping—pulseless discharge, no hammer or vibration.

No Metallic Contact Between Rotors sustains high volumetric efficiency.

High Volumetric Efficiency reduces wear caused by erosion.

Only Suction Pressure on Stuffing Boxes reduces packing maintenance.

Direct-connected up to 1800 RPM

Available in corrosion resistant alloys. Special bodies, stuffing boxes and bearings for high temperature applications. Hopper type bodies for extremely high viscosities. Sier-Bath "Gearx" Pumps for lower pressures and capacities.

WRITE FOR FURTHER INFORMATION

9268 HUDSON BLVD.
NORTH BERGEN, N. J.

Also Manufacturers of Precision Gears and Flexible Gear Couplings
Founded 1905 Member A.G.M.A.

Sier-Bath
GEAR and PUMP CO., Inc.

When inquiring check CP 4762 on handy form, pgs. 2-3

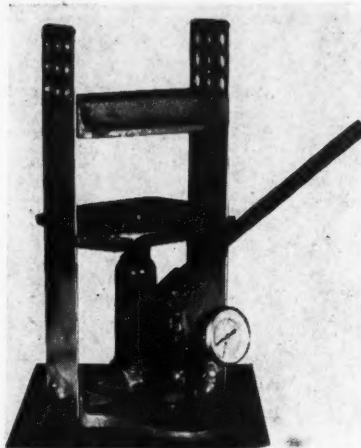
PROCESSING EQUIPMENT

Hydraulic press has host of functions in laboratory . . .

develops 83 psi pressure for maximum load of 3000 lb

Uses: Laboratory-type hydraulic press designed for pressures up to 83 psi, with total load of 3000 lb. Presses are presently being used for crushing stone, extracting liquor from pulp and juices from fruit and vegetables, pressing bacteria, and a host of other laminating, molding, drawing, forming, and compression operations.

Features: "K&K Laboratory Press", Model 100, is a simplification of a



Multi-purpose hydraulic laboratory press can exert maximum pressure of 3000 pounds if desired

press previously restricted to custom designs by special order.

Description: Standard dial gauge of press indicates number of pounds of direct hydraulic pressure with maximum loads up to 3000 lb. Accessories are being developed for the unit. Complete portability is reported.

Source: Announced by the Knuth Engineering Company, Dept. CP, Chicago, Ill. . . or for more information check CP 4764 on handy form, pages 2 and 3.

Automatic feature shown for door operators

Modern automatic operating equipment for doors and gates is presented by means of descriptive explanatory text plus free use of pictures and diagrams. Brochure shows what has been done in this field in the past 20 years, and what makes the use of automatic operating devices constantly more necessary. It is issued by Robot Appliances, Inc., Dept. CP, Dearborn, Mich. When inquiring check CP 4765 on handy form, pages 2 and 3.

How to save money on protective painting



Do you know that Ucilon® Coating Systems withstand fumes or constant contact with such coating-destroying chemicals as acids, alkalis, bleaching and cleaning compounds, salt solutions, petroleum and its derivatives, water, oxidants and other corrosives?

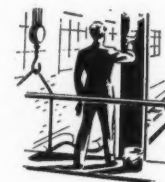
Many chemical engineers know this, and are getting the benefits of longer lasting paint jobs and savings on maintenance of plant and equipment.

CASE HISTORY

System of Ucilon Coatings used by Michigan chemical company on caustic pumps and equipment. The company states that the coatings have held up for over two years—which is the best protection ever obtained on this equipment.

Send for data.

*Trade Mark



UCILON Protective Coatings

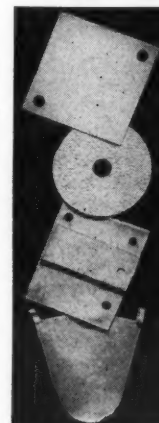
One Group of the Many **UNICHROME** COATINGS FOR METALS

UNITED CHROMIUM, INCORPORATED 100 East 42nd Street, New York 17, N. Y.
Detroit 20, Mich. - Waterbury 20, Conn. - Chicago 4, Ill. - Los Angeles 13, Cal.
In Canada: United Chromium Limited, Toronto, Ont.

When inquiring check CP 4766 on handy form, pgs. 2-3

FILTER MEDIA

for Chemical Processing



FILTER PAPER

LABORATORY . . . INDUSTRIAL . . . Made from finest materials for accuracy and dependability . . . light and heavy weights . . . slow and fast filtering speeds . . . large stock maintained . . . cut to any size and pattern . . . samples furnished for experimental purposes.

FILTER CLOTH

Cottons, wools, felt, glass, nylon, silk, vinyon, saran, metal mesh and many other synthetic materials cut and sewn in all shapes and sizes . . . many weaves, weights and finishes.

ASBESTOS PADS

Quality filtering pads furnished in a range of grades varying in porosity and filtering characteristics. Sizes and shapes for all needs.

OTHER "Filpaco" PRODUCTS: filters, stainless steel storage and mixing tanks, fillers, pumps, conveyors, fittings, and filter aids.

WRITE TODAY for further information and samples!



FILPACO INDUSTRIES
The FILTER PAPER CO.

2432 S. Michigan Ave. Chicago 16, Ill.

When inquiring check CP 4767 on handy form, pgs. 2-3

CHEMICAL PROCESSING

METALAB

LABORATORY EQUIPMENT



Out of this world in **QUALITY...**

Down-to-Earth in **ECONOMY**

Imagination in Lab Equipment?

Yes, but also the sound business virtues of Economy, Efficiency, and Long Life.

Let METALAB help you plan—without obligation.

Write for Complete Catalog.

SECTIONAL LABORATORY FURNITURE and EQUIPMENT by

METALAB
Equipment Corp.

230 DUFFY AVE., HICKSVILLE, L.I., N.Y.

When inquiring check CP 4763 on handy form, pgs. 2-3

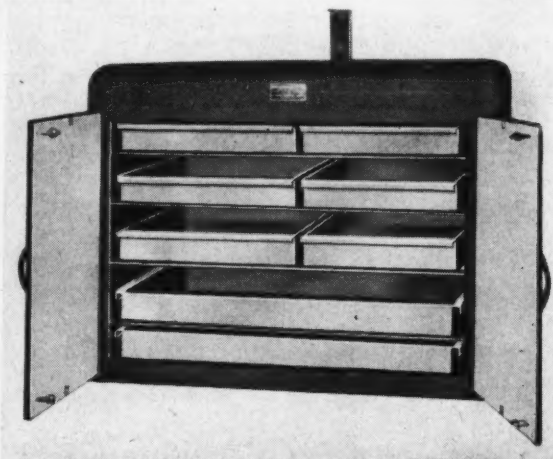
PROCESSING EQUIPMENT

Easier to take oven to site of work than work to oven . . .

eliminates hauling materials to remote, permanently located ovens; heats to 225°F in 15 minutes

Uses: Oven is recommended for a host of baking, drying, and heating processes — preheating plastic granules, treating powdered metals, baking small electronic components, etc. For shelf processing.

Features: Movable feature of oven permits locating it on-the-spot in working areas where it is needed, eliminating



Electric oven for a host of baking, drying, and heating processes

handling and hauling materials as when ovens are permanently and remotely located. Capable of heating to 225°F in 15 minutes.

Description: Latest electric oven by this maker is designated as model PL-1. Overall inside dimensions of oven are 29 x 24 x 20½" high. Four metal shelves (that accommodate eight 2" deep x 12" wide x 23" long drying pans — not included with oven) and a drip pan are standard equipment. Oven operates from 110-volt outlets without special wiring. Other special temperature and shelving arrangements are available.

Construction is all-steel with asbestos insulation. Forced air circulation is provided.

Source: Development of Grieve-Hendry Company, Inc., Dept. CP, 1101 N. Paulina St., Chicago 22, Ill. . . . or for more information check CP 4768 on handy form, pages 2 and 3.

Cementing steel grating linings aids in checking corrosion

Illustrated 1-page bulletin shows step-by-step procedure to be followed in applying cement over steel grating linings. This construction offers exceptionally high resistance to erosion; successful installations have been made in refineries for lining points of attack in fluid catalytic cracking equipment in feed and return lines, fittings, valves, and cyclone equipment.

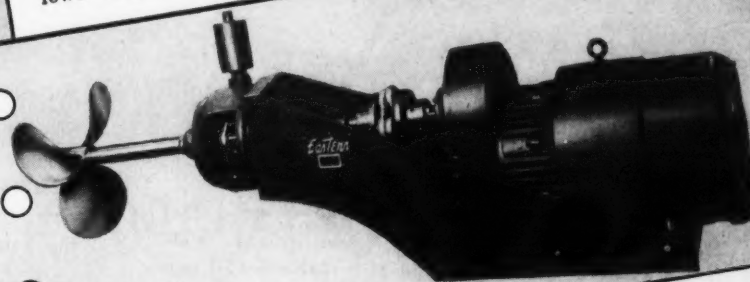
"Installation of Cement — Steel Grating Linings" is issued by Special Chemicals Dept., Pennsalt Chemicals, Dept. CP, 1000 Widener Bldg., Philadelphia 7, Pa. When inquiring specify CP 4769 on handy form, pages 2 and 3.

EQUIPMENT NOTES

TOP ENTERING MIXERS



Eastern Series C Vertical Mixers are applicable to a wide variety of specialized needs. They're designed for tanks needing agitators with a range of 1/4 to 10 H.P. at standard speeds of 1725, 1140, 420 and 280 R.P.M. They have standard NEMA ball-bearing type motor with a rigid-type coupling between motor shaft and propeller shaft. Stuffing box is separate component and can be made of any alloy, allowing lower original cost.



HEAVY-DUTY SIDE ENTERING MIXERS

Eastern Series A Mixers are extra heavy-duty machines for large tank capacity. They range from 5—30 H.P. at standard speeds of 1150, 420, and 280 R.P.M. Shaft is coupled to standard motor by flexible coupling, and the shaft and bearing housing move as single unit to allow easy adjustment and repair. Stuffing box is repackable with full tank.

Eastern

Catalog sent on request . . .

The complete Eastern catalog of Fixed Mounting Mixers, both Top and Side Entering, is yours on request. Ask for Bulletin TA-600

EASTERN INDUSTRIES, INC.

• • • NORWALK, CONN. • • •



When inquiring check CP 4770 on handy form, pgs. 2-3



Can you guess *How Much*
it cost to mail you this copy
of **CHEMICAL PROCESSING?**

15c . . . if you live in San Francisco. 12c if your home is in New York; 14c to Portland; 13c to Miami; 8c if you live here in Chicago. That means 96c to \$1.80 per year . . . for postage alone. Yet this magazine comes to you without charge.

12¢

15¢



Advertisers demand best coverage

Since the advertisers pay the bills, the publisher can succeed only as he publishes the most readable magazine and then gets the best possible coverage of the best readers in the field.

And, as you can see, the most effective method of getting such coverage is (a) to hand-pick the most important men and (b) send the magazine to ALL of these men.

That's why you get **CHEMICAL PROCESSING** . . . without charge. You are important in chemical processing, hence you are important to our advertisers, hence you are important to us as publishers. That's why we spend many thousands of dollars on every issue of **CHEMICAL PROCESSING**, to make it of top interest to you in your work — to make every issue more than worth your reading time. That's why **CHEMICAL PROCESSING** comes to you without charge.

Why do we do it?

Why don't we demand that you buy a subscription? Well, strange as it may seem, it usually costs more to sell a subscription than the publisher gets out of it . . . and a good many important men simply can't be reached when selling subscriptions.

Then where DO publishers' dollars come from?

Contrary to what many folks think, subscription revenue is hardly a "drop in the bucket" of a publisher's income. Most all of it must come from the advertising sold.

So the publisher must get maximum readership from the maximum number of readers in the field . . . from men like yourself . . . so his advertising pages will be of greatest value.

CHEMICAL PROCESSING

Published by **PUTMAN PUBLISHING COMPANY**

111 East Delaware Place

Chicago 11, Ill.

Creators of **PUTMAN-STYLE** Magazines
terse editorial; high-visibility, square format;
more quality-readership; more **READER ACTION**

MEMBER OF NATIONAL BUSINESS PUBLICATIONS, INC. & CONTROLLED CIRCULATION AUDIT, INC.



PROCESSING EQUIPMENT

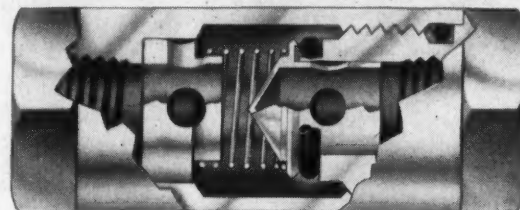
Low-pressure pneumatic or gas applications for check valve . . .

cracking pressure is 4 to 8 inches water column; valve seals before pressure across poppet is equal

Uses: Check valves for very low-pressure pneumatic or gas systems: where the slightest pressure must open the valve and absolute sealing is still a major requirement. Originally developed for use in extremely sensitive air thermostat control systems.

Features: Cracking pressure is 4 to 8 inches water column. Valve seals before pressure across poppet is equalized, and will hold bubble-tight against any back pressure within its range of 0-100 psi.

Description: Valve is normally manufactured in brass or aluminum, with other materials available on order. Sealing is obtained by use of a poppet with knife edge which is impressed into surface of O-ring. Damage to



Knife edge on poppet impresses into O-ring to insure positive seal under back pressure

ring, as well as any vulcanizing tendency, is prevented by limiting the impression to a few thousandths of an inch; metal-to-metal contact between poppet and body carries the full pressure load. Design insures accurate centering of knife edge on the ring with the valve mounted in any position.

Source: Series 119 check valve is made by James-Pond-Clark, Dept. CP, Pasadena, Calif. . . or for more information check CP 4771 on handy form, pages 2 and 3.

Both pulley and sprocket drive offered for non-corrosive, reversible pumps . . .

capacity range is from 1/10-19 gph; pressures to 150 psi; handle light or viscous liquids

Uses: Wide applications involving range of liquids from light to viscous, especially where corrosion resistance is desired. Used as vital parts of steam cleaning equipment and in various types of industrial machinery as original equipment.

Features: Both types are available with hydraulically balanced built-in by-pass and adjustable base. Construction is such that lower transmission loads are absorbed by the pump housing, without being transmitted to pump shaft bearing.

Description: Made in capacities from 1/10 to 19 gpm

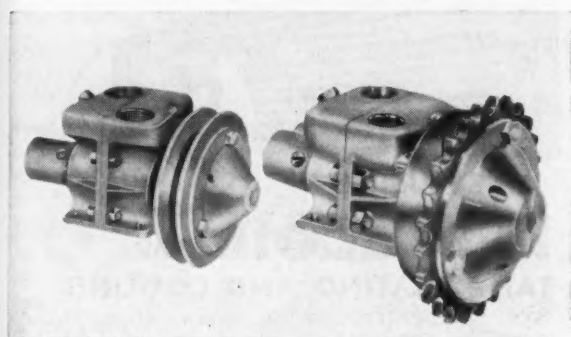
CHEMICAL PROCESSING

NBP

CCA

PROCESSING EQUIPMENT

for use against pressures up to 150 psi. Available in naval bronze forgings or stainless steel precision castings. Pumps operate in either direction without loss of efficiency. Four sizes: 1/4, 3/8, 1/2, and 3/4", with speeds from 300



Pulley and sprocket-drive pumps

to 3,400 rpm. Pump drives are packed with lubricant, and being fully sealed and shielded, require no servicing. Pump bearings require no lubrication.

Source: Eco Engineering Co., Dept. CP, 12 New York Ave., Newark, N. J. . . . or for more information check CP 4772 on handy form, pages 2 and 3.

Self-adhesive backing speeds installation of safety signs . . .

signs stick without moistening to any clean surface such as windows, doors, walls, or machinery.

Uses: Safety signs for use on windows, doors, walls, or machinery.

Features: Stick without moistening to any clean surface.

Description: Printed on cotton cloth which has self-adhesive backing. Message is shown in large bold letters on the proper safety background color. Each sign is coated



Safety signs are available in wide range of text and colors, will stick without moistening

with plastic to resist dirt, grime, and moisture, making them suitable for indoor or outdoor applications. Selection of over 550 different signs are available from stock, and special signs can be made to order.

Source: Quik-Label safety signs are made by Dept. 203, W. H. Brady Company, Dept. CP, Chippewa Falls, Wis. . . . or for more information check CP 4773 on handy form, pages 2 and 3.

MAY, 1951



How much Valuable Dust can you Economically Recover?

Unique advantages of Buell Equipment couples Peak Efficiency with Peak Economy in Valuable Dust Recovery!

In the recovery of valuable dust, a line must be drawn between the limits of peak efficiency and practical economy.

For, as you know, there is a degree of efficiency, beyond which, recovery becomes economically unsound.

Buell dust collection equipment was designed with this premise in mind. Its specific operating advantages permit dust recovery efficiencies beyond those of ordinary collection devices.

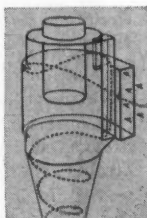
Experienced Buell engineers are qualified to show you how to economically increase your valuable dust collection efficiency with either a Buell 'SF' Electric Precipitator, a Buell mechanical collector, or a combination system utilizing both. They will be glad to discuss your problem with you. Write for an appointment today, or ask for the Buell catalog. Buell Engineering Company, 70 Pine St., Suite 5026, New York 5, N. Y.

Only Buell Incorporates these Efficiency Building Advantages

Buell 'SF' Electric Precipitator: StediFLOW Dust Fall assured through carefully timed, continuous-cycle rapping of plates in line.

Exclusive self-tensioned Spiralelectrodes for greater corona emission without danger of flash-over.

Buell van Tongeren Cyclone: Exclusive van Tongeren "shave-off" principle of Buell Cyclones permits sustained efficiencies, substantially higher than those of any other kind of mechanical collection.



buell

Engineered Efficiency in Dust Recovery

When inquiring check CP 4774 on handy form, pgs. 2-3

CARBALL UNIT...

SPECIFICALLY DESIGNED FOR THE CLEAN, EFFICIENT CARBONIZATION OF LIQUIDS

92% TOTAL CHEMICAL EFFICIENCY

- Produces the highest percentage of CO₂ gas with no CO or condensable carbon.
- No scrubbers or filters required.
- Compressor handles clean, cold air only. The fuel is burned under sufficient pressure to cause deep diffusion directly from the producer.
- Diffuses CO₂ gas by efficient impingement diffuser, insuring 92% absorption.
- A factory-tested, package unit with air compressor, fuel pumps and appurtenances mounted on one frame.
- 50% more chemical efficiency than any other method in current practice.

WRITE FOR BULLETIN 7542

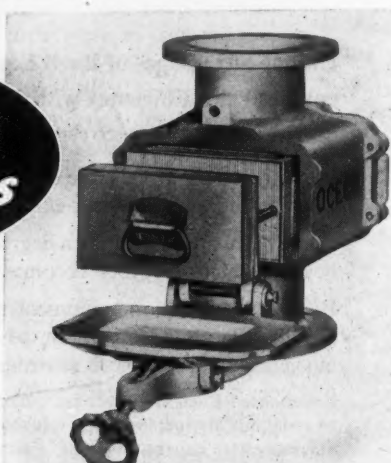
WALKER PROCESS EQUIPMENT INC.

PROQUIP FACTORY • ENGINEERING OFFICES • LABORATORY
PROCESS EQUIPMENT AURORA • ILLINOIS

When inquiring check CP 4775 on handy form, pgs. 2-3

OCECO Flame Arrestors

are a
DEPENDABLE
Flame Stop



● These arrestors combine the desired flame stoppage and explosion prevention with minimum pressure drop. Sturdy, rugged semi-steel housings and covers. Corrosion resistant aluminum "banks" have vertical straight through passages, minimizing clogging and simplifying inspection;—extensible for easy cleaning. 2" to 10" sizes. Write for Bulletin No. 471-R. It gives full details.

OCECO TANK FITTINGS

THE JOHNSTON & JENNINGS CO.

division of PETTIBONE MULLIKEN CORP.

4751 West Division St.

Chicago 51, Illinois

When inquiring check CP 4776 on handy form, pgs. 2-3

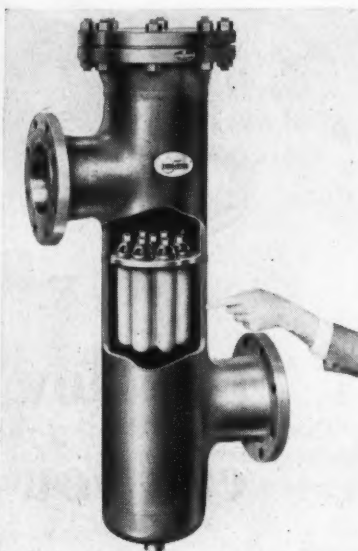
PROCESSING EQUIPMENT

Removes liquids, solids from compressed air, gas lines...

makes pneumatic devices function more efficiently

Uses: For freeing compressed air and other gases from contaminating water, free oil, water-oil emulsions, and dirt.

Features: Fed with clean air, in-



Ejects liquids, dirt from compressed air and gas lines

struments and other pneumatic devices function more efficiently. Lines are also protected.

Description: "Liqui-jectors" remove liquids and dirt automatically by means of liquid-impervious ceramic filters. There are no moving parts to cause trouble.

Source: Development of the Sels Corporation of America, Dept. CP, Philadelphia 34, Pa. . . or for more information check CP 4777 on handy form, pages 2 and 3.

Protects process liquids from metal particles

Magnetic trap for removing tramp iron and other stray metal particles from liquid lines is described and illustrated in 2-page catalog sheet. Simple clamp ring provides disassembly in 2 seconds, without removing body of trap from line.

Trap is available in 2, 3, and 4" OD inlet and outlet sizes with various threads. Catalog Sheet 1151 is issued by Tri-Clover Machine Company, Dept. CP, Kenosha, Wis. When inquiring specify CP 4778 on handy form, pages 2 and 3.

YOU SAVE **STEEL**
MANHOURS
MONEY



BY USING PLATECOIL FOR TANK HEATING AND COOLING

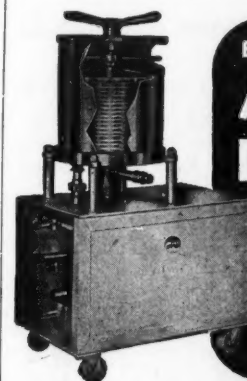
YOU SAVE CRITICAL STEEL because "Platecoils" require less than 1/2 the steel used in pipe coils of the same surface area. A 22" x 119" Platecoil weighs 95 lbs. against 239 lbs. for an equivalent 2" pipe coil. 144 lbs. steel saved. YOU SAVE CRITICAL MANHOURS because "Platecoils" are easily installed, cleaned or replaced in minutes . . . No down-time . . . No tank dumping. Many manhours saved. YOU SAVE MONEY because "Platecoils" cost up to 50% less in initial cost and require less maintenance. Investigate "Platecoils" today.

Send for complete technical manual and descriptive Bulletin No. P54

PLATECOIL

Division
KOLD-HOLD MFG. CO.
LANSING 4, MICHIGAN

When inquiring check CP 4779 on handy form, pgs. 2-3



ERTEL CYLINDER TYPE Positive Seal DISK FILTER

1. FILTERING ELEMENTS are independently tightened to provide positive seal.

2. OUTER CYLINDER is closed by separate handwheel to prevent drippage or evaporation.

★ This multi-purpose filter will operate with a lesser number of sheets than its rated capacity if so desired. Unit is arranged to make reloading and cleaning as easy as possible. Rigidly constructed inlet and outlet rings insure a positive seal and thus eliminate the danger of bypassing unfiltered liquid. Fully illustrated in bulletin ECD-1 which gives complete specifications.

USES: Drugs, Cosmetics, Lotions, Perfumes, Wines, Whiskies, Cordials, Rums, Cider, Extracts, Water, Syrups, Hospital Supplies, Plating Solutions such as copper, nickel, chrome, tin, Chemicals, Antiseptics, etc.

ERTEL ENGINEERING CORPORATION

KINGSTON

NEW YORK

New York City Sales: 40 West 48th Street, N. Y. 19, N. Y.

ASBESTOS FILTER SHEETS • ASBESTOS SHEET FILTERS
CYLINDER TYPE DISC FILTERS • PYROGEN FILTERS
VACUUM BOTTLE FILLS • PUMPS • MIXERS • CAPERS

When inquiring check CP 4780 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESSING EQUIPMENT

Arrangement of components easily varied to meet dust collection needs . . .

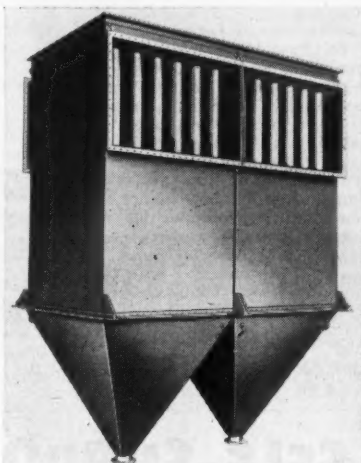
simple, compact precipitator units are suitable for handling fly ash, cinders, and dusts

Uses: For requirements demanding a simple, all-purpose, mechanical dust precipitator for handling fly ash, cinders, and industrial dusts.

Features: Compact design, simple in operation and easy to install and maintain. Sectionalized construction makes these collectors adaptable to a wide variety of existing or new installations.

Description: As indicated in the illustration, the unit assembly is made up of sections. These sections can

contain a variable number of tubes, arranged from three to seven tubes wide and from four to ten rows deep. Basically each tube assembly is an individual cyclone or centrifugal dust collector. By maintaining uniform gas distribution and controlling re-entry to the individual tubes, overall performance of these multi-tube units is sustained comparable with a single small diameter cyclone.



Sectionalized precipitator

In the assembled unit the dust laden air or gas enters the inlet plenum horizontally from the side near the top of the tube casing. A spinner element with helical flights is located at the top or entrance of each tube. This spinner sets up a high centrifugal action with a minimum of turbulence. Under the combined forces of gravity and centrifugal action, dust is concentrated in the area adjacent to tube wall as it is carried downward in the tube. At the lower end or dust outlet of the tube, a vortex is formed similar to that in a natural cyclone. Here dust is skimmed off into a gas-tight receptacle, and the clean air or gas enters the inner, upward moving vortex.

Clean air or gas is discharged through the outlet tubes into a plenum chamber. Flanged outlet can be located at either top or rear of casing, depending on duct or breeching arrangement desired. Engineering and design information is available that aids selection of proper units for air and gas volumes ranging from 5,000 to 200,000 cfm.

Source: American Blower Corp., Dept. CP, Detroit 32, Mich. . . or for more information check CP 4781 on handy form, pages 2 and 3.

Briefly describes many items of processing equipment

Illustrations and brief descriptions of many items of processing equipment are given in 4-page bulletin. Equipment consists of mixers, agitators, blenders, thickeners, and allied units. Bulletin 151 is issued by The Cleveland Mixer Co., Dept. CP, 7016 Euclid Ave., Cleveland 3, Ohio. When inquiring specify CP 4782 on handy form, pages 2 and 3



RE-DESIGNED...for a new high in Pumping Performance!

Worthington Type Q Vertical Turbine Pumps Climax Many Years of Continuous Development

Only the longest and broadest experience in the field could produce the Worthington Type Q Vertical Turbine Pump. New and exclusive casting methods, hydraulic and dynamic

balanced impellers, and greatly improved bronze bearings are among the many features combining to give you the most efficient pumping performance at lowest possible cost.

Water-lubricated model illustrated

BOWL DESIGN-DETAILS

- 1 Discharge bowl construction of advanced type, providing most efficient conversion from velocity to pressure as liquid enters column. Oil-lubricated model includes new double-sealed construction for maximum protection.
- 2 Having made both enclosed and semi-open impellers for many years, Worthington now standardizes on enclosed. Advantages: up to 50% less down thrust . . . lighter loading of the thrust bearing and less shaft elongation, reducing sensitivity to changes in vertical clearance . . . elimination of extremely close vertical adjustment in the field.
- 3 Flanged type bowls for tighter joints, less corrosion, easier assembly, better alignment.
- 4 Renewable bronze wearing rings standard on all sizes except 6".
- 5 Large diameter shafts and extra long bronze bearings with sand collars at both ends of bowl assembly maintain rotor alignment, prevent vibration, assure longer life.

Available in sizes from 6" to 32", water- or oil-lubricated, Worthington Type Q Vertical Turbine Pumps handle liquids at temperatures of 7° below zero F to 500° F with maximum head per stage over the entire size range.

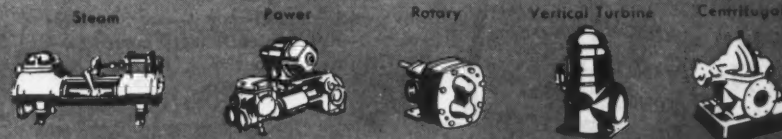
Contact your local Worthington

dealer for the whole story that proves *there's more worth in Worthington*. Complete manufacturing and servicing facilities at Denver, Colo., and Harrison, N. J. **Worthington Pump and Machinery Corporation, Harrison, N. J.; Denver 16, Colorado.**

WORTHINGTON



THE WORLD'S
BROADEST LINE
ASSURES YOU THE
RIGHT PUMP FOR
EVERY JOB

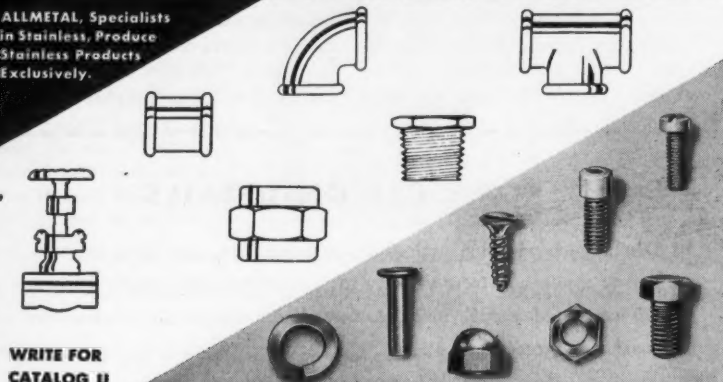


When inquiring check CP 4783 on handy form, pgs. 2-3

FOR YOUR STAINLESS STEEL FITTINGS AND FASTENERS IT'S ALLMETAL FOR QUALITY AND DELIVERY

Allmetal's fasteners and fittings are stocked in types 304 and 316.
Specials to order. All made right by Allmetal.

ALLMETAL, Specialists
in Stainless, Produce
Stainless Products
Exclusively.



WRITE FOR
CATALOG U



MANUFACTURERS SINCE 1929

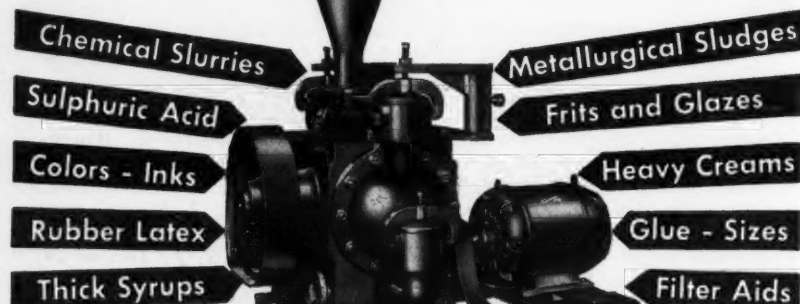
ALLMETAL

SCREW PRODUCTS COMPANY, INC.

33 GREENE STREET NEW YORK 13, N. Y.

When inquiring check CP 4784 on handy form, pgs. 2-3

The Pump that Deep Cuts Cost of Operation and Maintenance



SHRIVER DIAPHRAGM PUMP

- No Stuffing Box
- No Leakage
- No Wear on Working Parts

In this pump the fluid being pumped is kept from the mechanical parts by rugged diaphragms, thereby avoiding contamination and wear. Only the liquid handling ends need be made of the required metal or rubber-covered for protection. Pump operation is positive and easy; cleaning—easy; maintenance—negligible. Delivery pressures—to 100 p.s.i. Capacity—1 to 100 g.p.m. Write for Bulletin 126.

T. SHRIVER & COMPANY, Inc.

846 Hamilton Street

Harrison, N. J.

When inquiring check CP 4785 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

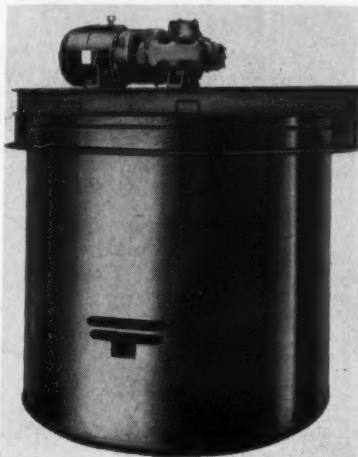
Stirrers convert mixers from semi-paste jobs to liquid work . . .

either type of stirrer available to meet requirements

Uses: Liquid and semi-paste mixers.

Features: Paste or liquid stirrers can be furnished as desired.

Description: Units are available in sizes from 50 to 1500 gallons. Motor



Motor is directly connected to stirrer shaft

is right-angle gearhead reduction type, directly connected to stirrer shaft.

Source: Number 36 mixers are made by Charles Ross & Son Company, Dept. CP, Brooklyn, N. Y. . . . or for more information check CP 4786 on handy form, pages 2 and 3.

Interchangeable hubs make better joints on raintight units . . .

screw into top endwall; range of sizes available

Uses: Interchangeable hubs for circuit breakers, multi-breakers, switches, and fusible entrance equipment.

Features: Assures an electrical bond and a watertight joint; reduces needed inventory.

Description: Galvannealed outdoor device has an extruded top which is threaded for the die-cast interchangeable hub. Correct size of hub for conduit is selected and screwed into top endwall. When no hub is required, a similar die-cast closing cap may be inserted which completely seals the opening.

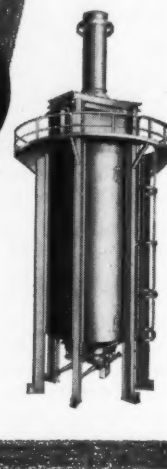
Hubs may be used on equipment other than that mentioned by cutting a hole and using an adapter nut as a lock nut.

Source: Interchangeable hubs for

★ For Direct Heating of Liquids and Vapors

★ Indirect Heating Systems Using Circulating Medium

Struthers Wells
FIRED HEATERS
for the Process Industries



Struthers Wells direct fired heaters are available in sizes from 100,000 to 25,000,000 BTU per hour, for heating gasoline, oils or asphalts, superheating steam or gas, and for indirect heating systems.

Struthers Wells indirect heating systems give economical—trouble-free operation at temperatures to 750° F., or above.

If your process requires temperatures above those of existing steam supply—if steam is not available, or if the process can be improved by higher temperatures, investigate this simple and economical equipment. • Write on your letterhead for Bulletin B-45, describing our complete line of equipment for high temperature process heating.

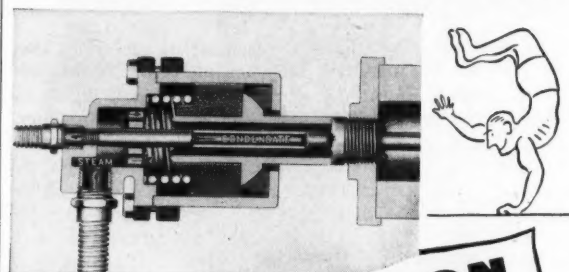


STRUTHERS WELLS CORPORATION
Warren, Pa.

PLANTS AT WARREN, PA. • TITUSVILLE, PA.
Offices in Principal Cities

When inquiring check CP 4787 on handy form, pgs. 2-3

SELF-SUPPORTING



JOHNSON
Type S Rotary Pressure JOINTS

It's self-supporting in more ways than one, this Type S Johnson Joint which is used to get steam or liquids in or out of heating or cooling rolls; In terms of dollars and cents its packless, self-lubricating, self-adjusting design has long proved it can pay its way out of savings in maintenance. Now the Type S is physically self-supporting too—ends the threat of misalignment completely. Alert design and production men will want to investigate the possibilities it offers for calendars, dryers, ironers, mills and similar machines.

Write for complete literature



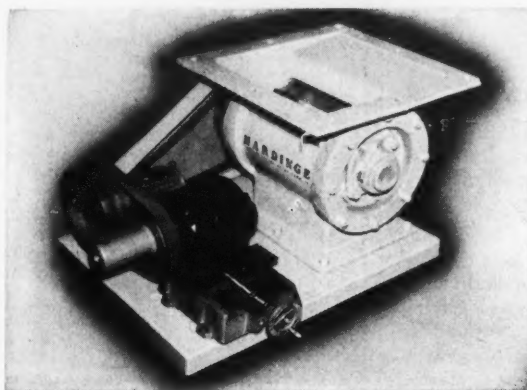
The Johnson Corporation

826 Wood St., Three Rivers, Mich.

When inquiring check CP 4788 on handy form, pgs. 2-3

CHEMICAL PROCESSING

NON-FLOODING FEEDER

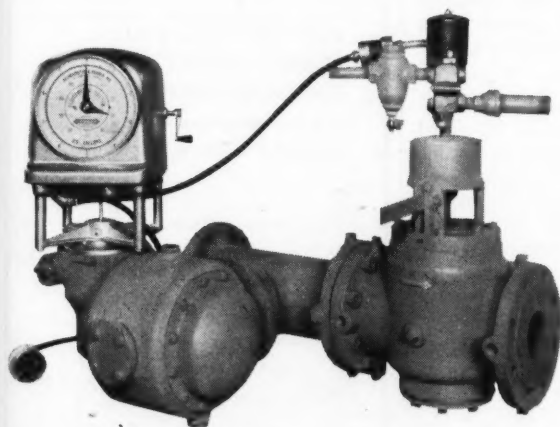


The Hardinge Non-Flooding Volumetric Feeder, pictured above, works on the "rotary pocket" principle — is particularly suited for fine materials. This is just one of the types of feeders made by Hardinge. Others: the Constant-Weight Feeder, the Disc Feeder, the Weight-Indicating Feeder, the Volumetric Belt Feeder. Write for Bulletin 33-D-13.

HARDINGE
COMPANY, INCORPORATED

YORK, PENNSYLVANIA—240 Arch St. Main Office and Works
NEW YORK 17 • SAN FRANCISCO 11 • CHICAGO 6 • HIBBING, MINN. • TORONTO 1
122 E. 42nd St. 24 California St. 205 W. Wacker Dr. 2016 First Ave. 200 Bay St.

When inquiring check CP 4789 on handy form, pgs. 2-3



AUTOMATIC VALVES

For Hard - To - Reach Places



Automatically operated jacketed valves, which have long been used with H & B Fluidometer metering systems, are now available for use where remote control is required without automatic batching features. See typical application above.

Valves of either straight, 3-way plug cock, or straight globe type are available for steam, air or hydraulic operation. These valves provide the solution to many problems of actuating valves in hard-to-reach places.

Write for Bulletin FI-49.

HETHERINGTON & BERNER INC.
711 Kentucky Ave. Indianapolis 7, Ind.

When inquiring check CP 4790 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

raintight devices are available from Square D Company, Dept. CP, 6060 Rivard St., Detroit 11, Mich. . . . or for more information check CP 4791 on handy form, pages 2 and 3.

Artificial respiration given automatically without suction . . .

compact kit unit provides safe, uniform lung ventilation

Uses: For automatic, artificial respiration, inflating the lungs with oxygen in the right amount and at the right pressure for the individual's physical requirements. Automatically "breathes" without suction for patient in cases of asphyxia.

Features: Approximates normal respiration. In connection with this



Artificial respiration kit

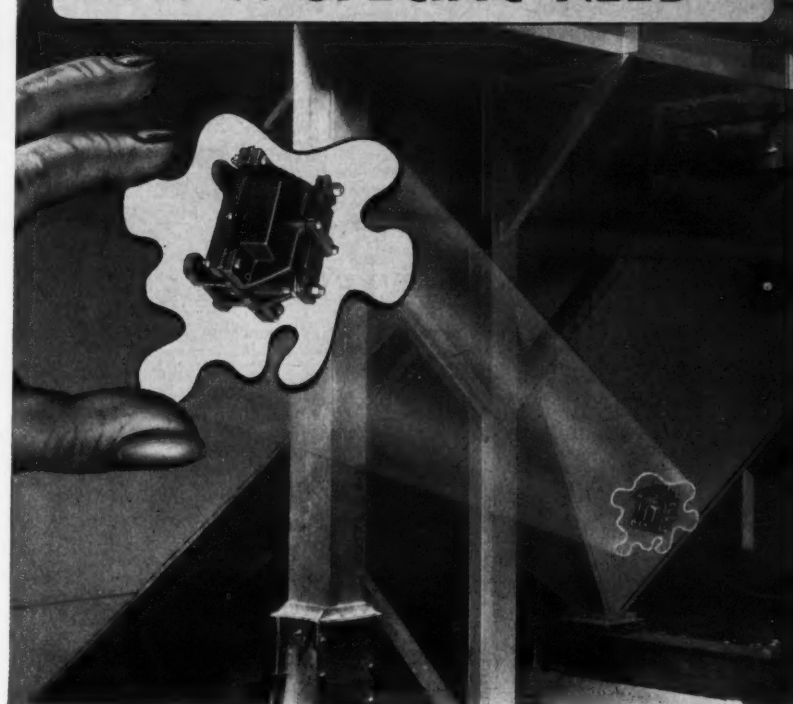
instrument, a second patient can be given simultaneous treatment by use of an auxiliary attachment which utilizes a separate control panel.

After voluntary breathing starts, instrument serves as an inhalator to satisfy patient's demand for oxygen. Unit is compact and weighs only 47 lb. complete.

Description: Pressure is regulated by setting of control. Oxygen cylinder of 21 cu ft capacity employs a cylinder valve with handwheel in upright position, making valve easily accessible. Facepieces are provided in two sizes. Aspirator is included for use where foreign material may block air passage of patients, as well as three sizes of plastic oral airways to aid in maintaining open passage. Device is packed in Fiberglas case.

Source: Pneolator is available from Mine Safety Appliances Co., Dept. CP, Braddock Thomas & Meade Sts., Pittsburgh 8, Pa. . . . or for more information check CP 4792 on handy form, pages 2 and 3.

FIT A SPECIFIC NEED



Assure Free-Flowing Bins,
Hoppers and Chutes
with

SYNTRON

"Pulsating Magnet"

ELECTRIC VIBRATORS

with variable control of power

They are designed to meet a specific need — to eliminate the arching and plugging of bins, hoppers and chutes. Their 3600 pulsating vibrations per minute keep even the most stubborn materials flowing evenly thru bins, hoppers, chutes and screens — of any size — providing faster processing of materials without the hammering and rodding that wastes manpower and damages equipment.

Send us the details of your problem — size of bin, gauge of walls, cubic content, material characteristics — and our Engineering Department will suggest the proper model electric vibrator for your specific need.

Write for illustrated folder

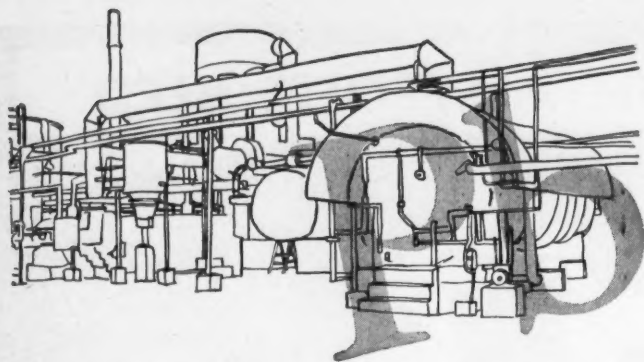
SYNTRON COMPANY

110 Lexington Avenue

Homer City,

Penna.

When inquiring check CP 4793 on handy form, pgs. 2-3



USING SULFURIC ACID?

Under many pressures, concentrations and temperatures, lead is the ideal material for handling sulfuric acid. It safely handles other corrosives as well.

For fabrication, lead is unique. Sheet lead can be welded, or "burned", to form a continuous lining; it can be bonded to another metal. Lead can be cast, die cast or pressure molded; extruded as pipe or other shapes; fastened by welding, flanging or bolting. Once installed, lead chemical equipment is easily repaired with a welding torch.

Because of the many complex factors in any corrosion problem, expert advice is usually advisable. For complete technical assistance, see Federated first. For lead products, think of ASARCO Brand lead pipe, lead sheet, and lead fittings.

Available in all standard sizes and forms through Federated's 22 sales offices across the country.

Federated Metals Division

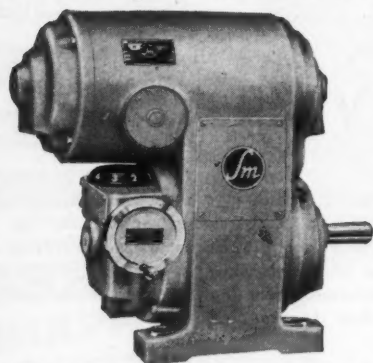
AMERICAN SMELTING AND REFINING COMPANY • 120 BROADWAY, NEW YORK 5, N. Y.

When inquiring check CP 4794 on handy form, pgs. 2-3



power modernization

Even a brand new motor
may be obsolete ...



Ask for your copy of pictorial bulletin No. A-52 showing Sterling Electric Power Drives Turning The Wheels of Industry.



STERLING SPEED-TROL

... Gives You Variable
Speed Control Necessary For:

- **PROCESS CONTROL OF:** Temperature—viscosity—level—pressure—flow—etc.
- **TIME CONTROL OF:** Baking—drying—heating—cooking—pasteurizing—soaking—chemical action—etc.
- **EQUIPMENT ADAPTATION TO:** Load variation—sequence synchronization. Size—tension—hardness or shape of materials to be processed—machined—conveyed—blended—mixed—etc.
- **VARIATIONS IN:** Quality—quantity—operators' abilities—etc.

STERLING ELECTRIC MOTORS

Plants: New York 51, N. Y.; Los Angeles 22, California; Hamilton, Canada; Santiago, Chile.
Offices and distributors in all principal cities.

When inquiring check CP 4795 on handy form, pgs. 2-3

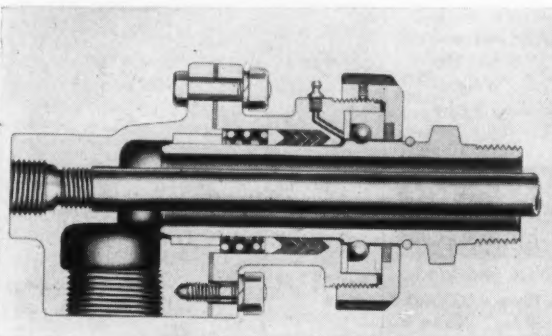
PROCESSING EQUIPMENT

Rotating joint's ball bearings carry load of both radial and end thrusts ...

revolving joints for rolls, calenders handle steam, oil; serviced without removal

Uses: For making piping connections to drum type dryers, rolls, calenders, and other rotating equipment. Available models provide for handling steam, oil, air, water, gas and chemicals.

Features: Extremely low torque offers power savings. Specially designed ball bearings carry load of both radial and end thrusts. Use of sleeve type pilot bearing, at the end of the rotating tube, insures alignment of the joint and provides a long bearing against twisting or cocking. Self-adjusting, self-sealing chevron type packing, carried under light spring pressure, provides a long-life seal on



View shows siphon outlet (left), steam inlet (lower left), ball bearing (lower right)

the rotating tube. Joints can be serviced without removing from roll. Packing quickly installed. Consistent with good practice and service requirements, joints are very compact.

Description: Joints are built for 150 psi steam or 200 psi hydraulic, as well as for vacuum service. Specified for speeds up to 500 rpm steam or 750 rpm hydraulic. Temperature rating approaches 450°F, depending on packing specified. Standard sizes range from 1/2 to 2". Body types include both single and siphon or two-way flow models with straight and angle connections. In the two-way flow models, a siphon pipe is extended through inlet tube for removal of condensate or discharge of gases or liquids.

Source: Barco Mfg. Co., Dept. CP, 1801-1815 Win-nemac Ave., Chicago 40, Ill. ... or for more information check CP 4796 on handy form, pages 2 and 3.

Delivers smooth chemical stream at rates of 1.0 to 15 gph ...

sends solutions, slurries into line, vessel at 100 psig; rate can be adjusted during pumping

Uses: Feeding solutions or slurries into line or vessel under pressures to 100 psig. Recommended delivery range is 1.0 to 15 gph. Maximum recommended temperature is 100°F.

Features: Delivery is smooth and pulsation-free. Feed rate is manually adjustable while unit is in motion.

Description: New model (2-47CF) Constaflow Chemical Feeder is a positive displacement, duplex diaphragm pump equipped with two transparent plastic reagent heads and driven by 1/4 hp motor. By employing special operating



*Have you
changed
your
address
recently?*

● If so, you'll want to insure that your copy of **CHEMICAL PROCESSING** reaches you without interruption. Just send us your new address ... use the handy form below.

Please answer all questions in regard to your new affiliation, and in addition give us your former address including company, city and state.

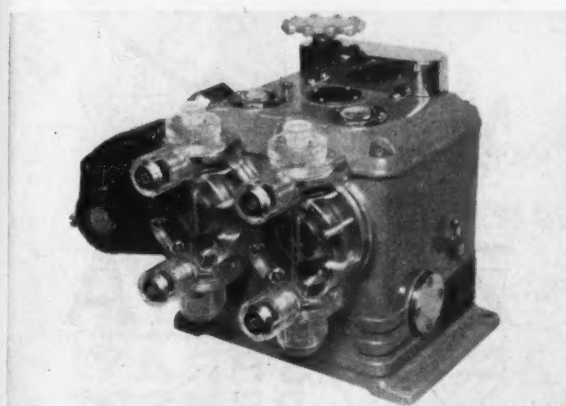
mail this request to
**READER SERVICE DEPT.
CHEMICAL PROCESSING**
111 East Delaware Place
Chicago 11, Illinois

.....
Former Company Affiliation
.....
Former Address
.....
Your Name Present Title
.....
Present Company
.....
Main Product
.....
Rating of Company
.....
Street Address
.....
City Zone No. State



CHEMICAL PROCESSING

PROCESSING EQUIPMENT



Feeds solutions or slurries at rates of 1.0 to 15 gph

cams and rocker bars, acceleration curve of one feeding head is exactly balanced by deceleration curve of second feeding head.

Single stroke adjusting knob controls amount delivered from each head. Feed rate can also be adjusted by changing position of V-belt on 3-step cone pulley. All moving parts are in oil bath.

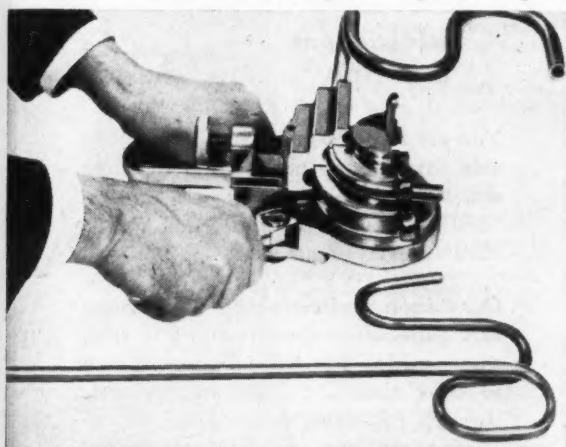
Source: Announced by %Proportioneers, Inc.%, Dept. CP, Providence, R. I. . . or for more information check CP 4797 on handy form, pages 2 and 3.

Easy to bend tubing up to 5/8" OD with hand tool . . .

3 sizes of tubing accommodated by single tool; requires no vise or fixtures

Uses: For making offsets and bends up to 180° in 3/8, 1/2, and 5/8" OD copper, brass, steel, and other light gauge tubing. Applicable in refrigeration, radiant heating, etc.

Features: Hand tool is simple to operate, requires



Hand tool for bending light gauge tubing

no vise or fixtures. All three tubing sizes are combined in the same tool.

Description: Called the "3 in One" model #1200. Has no loose parts. Weight is 5 pounds.

Source: Development of Tal Bender, Inc., Dept. CP, Milwaukee 2, Wis. . . or for more information check CP 4798 on handy form, pages 2 and 3.



How Celite Mineral Fillers give a product low-cost bulk . . .



Making a little cleanser go a long way

SINCE HOUSEHOLD CLEANSERS are one of many products that require bulk in order to do their work efficiently and economically . . . it is not surprising to find Celite Mineral Fillers used as a standard ingredient in quality cleansers.

The reason is the great bulk per unit of weight of Celite Mineral Fillers . . . as

well as their exceptionally low cost per unit of volume. In addition, they have a high absorptive capacity for perfumes and chemicals. Celite's porous, thin-walled cellular structure, from which these advantages are derived, adapts these diatomaceous silica powders to numerous industrial uses.

THESE CELITE PROPERTIES BENEFIT MANY TYPES OF PRODUCTS

Celite Mineral Fillers are composed of minute, multi-shaped particles that interlace to stiffen and strengthen admixtures. The microscopically small facets of these particles diffuse light so effectively that they can be utilized to impart any desired degree of flatness to a surface film. Their light, porous nature improves suspension, helps prevent segregation. Their high absorption properties and unique diatom

structure make them unusually effective for overcoming caking in deliquescent materials.

If you are looking for the "extra something" to lift your product above competition—at no extra cost—why not discuss your problem with a Johns-Manville Celite Engineer? For further information and samples, write Johns-Manville, Box 290, New York 16, New York. In Canada: 199 Bay Street, Toronto, Ontario.

CHECK LIST OF PRODUCT BENEFITS OBTAINABLE AT LITTLE COST WITH CELITE MINERAL FILLERS

- Added Bulk
- Better Suspension
- Faster Cleaning Action
- Greater Absorption
- Improved Color
- Better Dielectric Properties
- More Durable Finish
- Increased Viscosity
- Elimination of Caking
- Higher Melting Point
- Better Dry Mixing
- Improved Dispersion



Johns-Manville CELITE®

MINERAL FILLERS

When inquiring check CP 4799 on handy form, pgs. 2-3

A good tool
is EASY-TO-USE...

COLEMAN SPECTROPHOTOMETERS...

save time because they are
accurate and easy to use

Speed is based on ease of operation. Wave lengths are precisely selected by one dial. No calculations or adjustments for band-pass corrections. Fixed band-pass means instant reproducibility, and procedure calibrations stay valid as long as the chemistry remains unchanged.

Accuracy is based on simple design. No prisms, no filters, no intricate mechanisms to complicate the procedure. True measurements of transmitted light are made with the most simple technique.

Reliability is based on simple construction—no amplifiers or vacuum tubes which change with time. No complex mechanisms to wear out or require attention. Stable, rugged components . . . sound, solid construction mean trouble-free operation year after year.

UNIVERSAL SPECTROPHOTOMETER.

Model 14. A multi-purpose instrument for Spectrochemistry, Photo-fluorometry, Nephelometry and for Spectro and Electro titrations

WRITE FOR BULLETIN DB-212.

JUNIOR SPECTROPHOTOMETER.
Model 6A. For rapid routine analysis and control . . . and for research where only spectrochemistry is involved.

WRITE FOR BULLETIN DB-211.



COLEMAN INSTRUMENTS 318 MADISON ST.
MAYWOOD, ILLINOIS

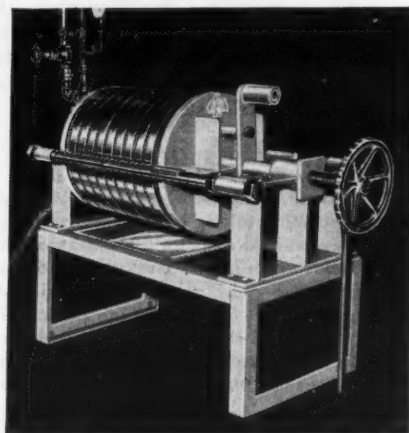
When inquiring check CP 4800 on handy form, pgs. 2-3

LOW COST
is only half the story
...the **Star**
FILTER PRESS
alone offers all these
practical money-saving
FEATURES

PROVEN by WIDE USE
in filtering:

Dyestuffs • Paints
Food products
Oils • Fats • Brine
Pharmaceuticals
Acids and Alkalies
All liquids &
Semi-liquids

- ★ **MORE FILTER AREA** per dollar of initial cost.
- ★ **EASIER MAINTENANCE.**
- ★ **NO GASKETS** — means no contamination and minimum leakage.
- ★ **ANY THICKNESS** sludge and cake frames.
- ★ **FROM 12" TO 56"** diameter and square.
- ★ **MADE IN ALL THE STAINLESS STEELS** and also monel, Hastelloy, Aluminum, Mild Steel, etc.



Star TANK AND FILTER CORPORATION
LEADING MANUFACTURER OF PROCESSING EQUIPMENT SINCE 1904

875 EDGEWATER ROAD ★ NEW YORK 59, N. Y.

Manufacturers of Stainless Steel Tanks for Storage and Mixing. All sizes. All shapes.

When inquiring check CP 4801 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

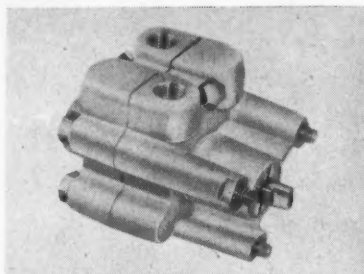
**3-9/16" overall length
of tiny piston pump . . .**

pumps 1.65 gpm against 150 psi;
handles variety of liquids

Uses: Miniature piston pump handles up to 1.65 gpm and operates against pressures up to 150 psi. Suitable for a wide range of liquids and viscous fluids. Compact size permits it to fit in cabinets where space is limited.

Features: Smallest and most compact unit developed by this maker to date. Overall length is merely 3-9/16".

Description: "M-3" is designed for flange mounting. It is available as a



Miniature piston pump

separate unit or with flange-mounted motor. Operating at 1750 rpm, it pumps at the rate mentioned above.

Pumps in either direction and requires no lubrication. Quiet operation and long life are reported.

Source: Development of Eco Engineering Company, Dept. CP, 12 New York Ave., Newark, N. J. . . . or for more information check CP 4802 on handy form, pages 2 and 3.

**Designs and adapts
line of mixers
for any job . . .**

standard units 12, 20, 30, and
60 cubic foot capacity

Uses: Line of shovel-blade-type mixers for an infinite variety of mixing jobs.

Features: Mixer design is such that units can be easily modified for numerous applications. For example, a dust-proof hood can be provided, the discharge can be changed to almost any desired position, or the mixer can be jacketed for operation at either high or low temperatures. In addition, many types of linings can be used to meet the requirements of specific applications.

Description: Twelve-cubic-foot model is the latest addition to established line of "Kelley" mixers of 20,



Design and Operating Simplicity . . . Lowest Cost . . .

Easy Installation . . . Stainless Steel Construction

Send for Bulletin

FOSTER D. SNELL, Inc.
CHEMISTS • ENGINEERS
29 W. 15TH ST., NEW YORK 11, N.Y.
PHONE WATKINS 4-8800

When inquiring check CP 4803 on handy form, pgs. 2-3

BRIEFS...

*from contemporary
publications*

READ THEM . . . IN THIS ISSUE

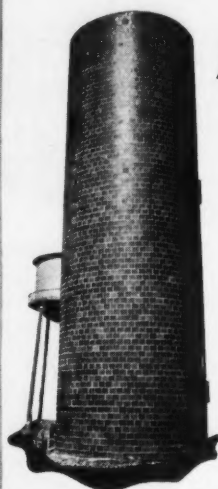
You get a "quick look" at the most valuable articles being published in this field, and kindred fields . . . by reading the "BRIEFS" section of **CHEMICAL PROCESSING** every month.

Our Editors read more than 50 contemporary publications every month . . . select those articles they believe you will want to know about . . . and, in terse style, they tell you about them. Name of publication and issue are given so you can read those you want to know more about.

It's a monthly service . . . to save you time . . . yet keep you informed. See "BRIEFS" in this issue, page 94.

FOR LOWER STORAGE COSTS

SPECIFY *Kalamazoo* GLAZED TILE



You practically eliminate maintenance problems and costs when you store bulk materials such as coal, gravel, and sand in tanks and silos made of Kalamazoo Glazed Tile. Far superior to concrete — easy to clean — cannot contaminate contents. For a permanent low-cost installation, specify Kalamazoo Glazed Tile.

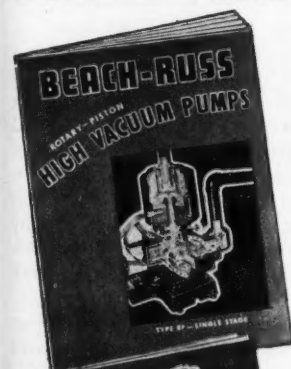
WRITE FOR COMPLETE FACTS

Kalamazoo TANK AND SILO COMPANY

432 Harrison Street • Kalamazoo, Michigan

When inquiring check CP 4804 on handy form, pgs. 2-3

Data on Vacuum Operations



These two catalogs cover the range in vacuum applications from 10 mm. to 10 microns or better, for distillation, extraction, impregnation, metallizing, deairing, electronic evacuation, pick-up and place or position and hold and all the many other uses of vacuum in the lab or in the plant.

BEACH-RUSS ROTARY VACUUM PUMPS

offer you faster pump down, superior mechanical efficiency and much longer service life.

Write for these two catalogs and ask us to put your name on the mailing list for "Much Ado About Nothing"... our regularly issued house organ that will help you keep posted on the newest ideas in the use of vacuum in industry.



BEACH-RUSS COMPANY
46 CHURCH STREET • NEW YORK 7, N. Y.

When inquiring check CP 4805 on handy form, pgs. 2-3

MAY, 1951

PROCESSING EQUIPMENT

30, and 60 cubic foot capacity. All are constructed of welded rolled steel plate. Shovel blades are adjustable, and are made of abrasion-resistant materials. Main shaft bearings are dust-proof, oil-sealed, and self-aligning.

Drive is by spur gear and steel pinion from either motor, gas or diesel engine, or clutch pulley.

Maker designs and adapts these mixers to do any mixing job.

Source: Kelley mixers are products of the Wittemann Machinery Co., Dept. CP, Farmingdale, N. J. . . or for more information check CP 4806 on handy form, pages 2 and 3.

No danger of slipping when men work on wet surfaces . . .

non-skid sandals won't mar surfaces, are reversible when worn

Uses: Non-skid type canvas sandals for use over conventional footwear — shoes, boots, etc.

Features: Reduces the danger of slipping on wet floors, inside storage tanks, and wherever smooth, wet surfaces present a safety hazard. Work-



Non-skid sandals

men report that they can accomplish a job with less fatigue because they can move without fear of falling and being injured.

Description: "Slogs" are made of three layers of heavy cotton duck and reinforced at all critical points of strain. When one side becomes worn they can be reversed, offering a considerable economy feature. Sandals are non-abrasive and will not injure any surface.

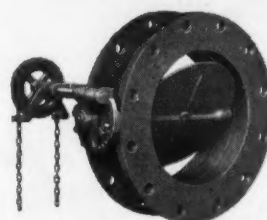
Source: Announced by the Belle-rose Products Company, Dept. CP, 24 Kerwin Place, Tarrytown, N. Y. . . or for more information check CP 4807 on handy form, pages 2 and 3.

Easy Positive Flow Control and Quick Shut-Off

W. S. ROCKWELL Valves

for Controlling

- Air supply to boilers, furnaces, reactors, dryers, kilns.
- Air or gases, clean or contaminated, corrosive or abrasive; flue gases and fly ash.
- Effluent from equipment or tanks.
- Dry or wet chemicals, pulp, materials from processing equipment, tanks, bins, hoppers, pneumatic conveyors.
- Vacuum operations; sewage; solvent recovery; powdered fuel.



Flanged butterfly valve with chain wheel control; may also be hand wheel or lever control.

BUTTERFLY TYPE

Full unrestricted flow of water, slurries, semi-solids, air or gas, and quick, positive, accurate regulation and shut-off. Built of any metal or rubber-lined. Pipe sizes 1" to 72". Pressure standard to 50 p.s.i. and special for higher pressures. Made for any temperature from sub zero to as high as 1800° F.

Control — Manual: lever, hand wheel, chain wheel, chain lever, etc. Automatic: electric motor, air diaphragm, air or hydraulic cylinder, solenoid, float, or other types, with positioners and special remote control mechanisms, if desired.

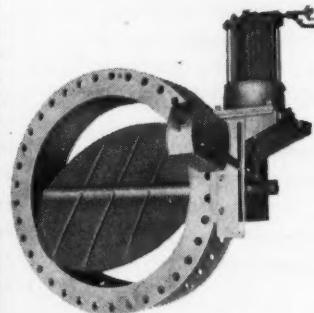
Wafer Butterfly Valves — rugged, lightweight, require only 1 set of bolts; sizes 4" to 72"; any type of control.

SLIDE TYPES

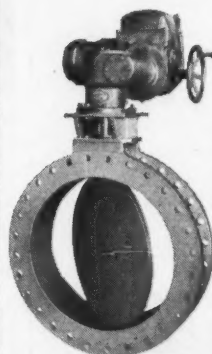
Standard—Made in threaded or flanged 1" to 20" sizes, with pull handle, lever or wheel control. Built of any required metal.

"Kwikleen" Type—For fluids containing solids that clog ordinary valves. Easy to clean without removing from the line by simply removing bottom clean-out plate and blowing or washing out the valve. All manual controls and also with air cylinders. Heavy duty "Kwikleen" Valves are made for 60 p.s.i. operating pressure.

Write for Catalog



Large butterfly valve with air or hydraulic cylinder.



30" butterfly valve for 60 p.s.i. line pressure; equipped with limit-torque motor operator and auxiliary hand wheel.

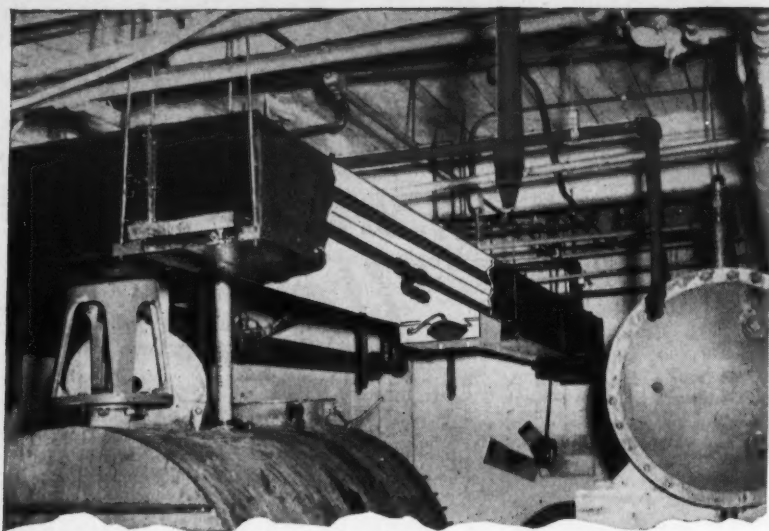
Threaded butterfly valve, 1" to 4" sizes, manual or automatic control.



W. S. ROCKWELL COMPANY

220 ELIOT STREET • FAIRFIELD, CONN.

When inquiring check CP 4808 on handy form, pgs. 2-3



FOR CHEMICAL PROCESSING OPERATIONS...



The use of certain chemicals in the manufacture of synthetics creates extremely dangerous fire hazard problems. Recognizing the need for maximum fire safety at the chemical processing operations shown, a new type of *Automatic FIRE-FOG* system was designed and installed. The system will detect a rupture in the process piping, immediately apply a water cooling spray of protection and will flush the flammable material to a safe location before the possibility of fire or explosion can occur. System operation is automatic and standard rate-of-temperature-rise heat detectors are employed. Vapor detectors are also used in conjunction with this type of system.

This typifies the design advantages of fire protection by *Automatic Sprinkler*. In many instances, actual hazardous conditions are simulated at our Testing Grounds. "Mock-ups" of the equipment to be protected are built and fire tests run, using the actual flammable materials involved.

It is this basic engineering, plus test and field experience that has earned for *Automatic Sprinkler* the reputation—leaders in the science of fire protection.

"AUTOMATIC" SPRINKLER CORPORATION OF AMERICA
YOUNGSTOWN 1, OHIO

"Automatic" Sprinkler

FIRST IN FIRE PROTECTION

DEVELOPMENT • ENGINEERING • MANUFACTURE • INSTALLATION
OFFICES IN PRINCIPAL CITIES OF NORTH AND SOUTH AMERICA

When inquiring check CP 4809 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

New dispensing assembly on polyethylene bottle gives control of discharge...

thin or heavy streams adjusted by shaping the spout
Uses: Polyethylene bottle can be used to mete out liquid chemicals in a controlled, thin stream.

Features: New type dispensing assembly is now being fitted to "Plaxpak" polyethylene bottles. Size of the stream is regulated as follows: 1) if a thin stream is desired, the spout can be stretched to decrease the size of the opening. 2) A heavier stream is obtained by snipping off part of the spout to increase the opening.

Description: Dispensing assembly consists of a 45° tubular polyethylene spout telescoped into a flexible plastic tube that extends the full depth of the bottle and is force-fitted through the bottle's phenolic cap closure. A very light squeeze of the bottle dispenses a quick squirt of liquid, while a firm squeeze gives a steady stream.

By virtue of polyethylene, the Plaxpak bottle is chemically inert and resilient.

Source: Manufactured by the Plax Corporation and distributed by S. H. Ansell & Sons, Dept. CP, 817-825 Summer St., Boston 27, Mass. . . or for more information check CP 4810 on handy form, pages 2 and 3.

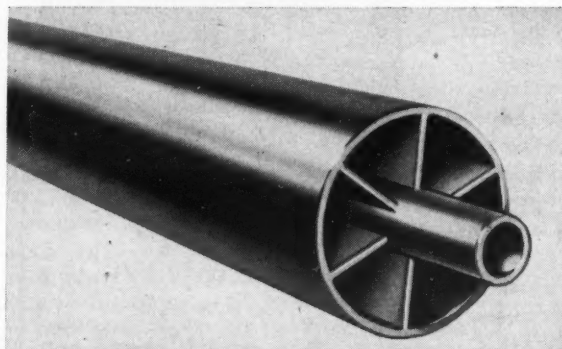
Easily arranged finned tubing is efficient two-fluid-pass heat transfer surface...

made in concentric form with 6 radial fins in various metals; wide temperature, pressure range

Uses: Tubing possesses characteristics which make it suitable for heat transfer with many uses in gas liquefaction, pharmaceutical processing, condensing, and also exhaust heat recovery and heating requirements involving viscous materials. Originally designed for a specific application involving low temperatures and high pressures.

Features: Tubing may be equipped with simple "T" end fittings to provide easy connection to both passes, and can be conveniently arranged in series or parallel banks.

Description: This two-fluid-pass heat transfer surface is in the form of a concentric tubing with radial



Concentric tubing with radial fins; 1 and 1-3/4" sizes

pins. It can be fabricated of copper, steel, stainless steel, nickel and other metals in lengths up to 20'. It is suitable for a wide range of temperature and pressure requirements. For maximum heat transfer, intimate contact is accomplished by means of fusion bonding of fin and tube elements.

Tubing is being made with 6 radial fins, as shown, and

SLY

Pioneers and Leaders
in INDUSTRIAL
DUST CONTROL



Have You
A Difficult Dust?

SLY CAN CORRECT IT

Tobacco dust is only one of the *difficult* dusts being collected by Sly Dust Filters. Others are powdered sugar, bentonite clay, paint and pigments, aspirin and other pharmaceuticals, chemicals of all kinds, talc, lime, detergents. Designed and engineered so that they save on space and power, Sly Dust Filters require less attention, less maintenance, yet — they are not expensive.

Sly Dust Filters are used to collect more than 100 kinds of dusts — and they get *all* the dust by filtration through cloth. Ask for Bulletin 98 and tell us your dust problem. Our experience with thousands of installations is at your disposal.



THE W. W. SLY MANUFACTURING CO.
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New York • Chicago • St. Louis • Philadelphia
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When inquiring check CP 4811
on handy form, pgs. 2-3

CHEMICAL PROCESSING

**For protection
against
Air Damage—**

USE

**MAGNOLIA
AIRCO
NITROGEN
for
oxygen-free
atmospheres**

For deaerating, processing, storing and packaging fats and oils, in the packaging of dehydrated foods, and other processes requiring an inert atmosphere, use Magnolia Airco Nitrogen. It gives positive protection to practically any material susceptible to oxidation and corrosion.

Magnolia Airco is one of the leading producers, purifiers and suppliers of nitrogen in the southwest.

To meet your requirements Magnolia Airco can supply nitrogen in 224 cu. ft. cylinders, or, if your plant is conveniently located and is equipped with an internal pipeline, delivery in bulk may be made in trailers. For further information address our nearest office.



**AIR REDUCTION
MAGNOLIA CO.**

A Division of Air Reduction Company, Incorporated
Beaumont • Corpus Christi • Dallas • El Paso • Fort Worth • Hobbs • Houston • Oklahoma City • San Antonio • Shreveport • Tulsa • Wichita Falls

Southwestern Headquarters for Oxygen, Acetylene and Other Gases . . . Carbide . . . Gas Welding and Cutting Machines, Apparatus and Supplies . . . Arc Welders, Electrodes and Accessories.

When inquiring check CP 4812 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

in diameters of 1 and 1-3/8". Tube geometry can, however, be modified to meet special product or process requirements, including variations in inner and outer tube diameters and fin spacing.

Because of its specialized character, this tubing is necessarily engineered to meet individual applications and is currently offered only in production lot quantities.

Source: CRF tubing is made by Modine Mfg. Co., Ind. Div., Dept. CP, Racine, Wis. . . . or for more information check CP 4813 on handy form, pages 2 and 3.

Chemicals, clay filler, enamels strained through gyratory liquid screener . . .

no clogging while in operation; no brush or artificial pressure used on material

Uses: For liquid straining of paints, enamels, chemicals, paper coatings, and practically every liquid that is strained. Extensively used in screening liquid, glaze, and clay slip in ceramic plants. In pottery applications, it serves as a vibrating screen for screening slip during preparation. Also in preparing clay slip during mixing and aging prior to pumping through the overhead casting pipe line or prior to hand pouring of molds.

Features: Designed to provide about twice the capacity of usual equipment with same screen area. Simple, strong construction with ease of cleaning. Pull on lever releases sieve, which is easily lifted out, dumped, and replaced.

No brush or artificial pressure is used to force material through sieve. Sieve cannot clog while machine is in operation.

Simple, gyratory action contributes to rapid screening, long life of screen cloth, and easy, quick replacement.

Description: Designed for portability. Motor and all working parts are above sieve, avoiding possible damage from material in process. Sieve is 20 3/4" diameter. Capacity depends on mesh or wire or silk used and nature of material. Motor is 1/6 hp totally enclosed, ball bearing equipped. Overall height of unit is 4' 6".

Also made with 35" diameter sieve, with drive by 1/2 hp motor for very heavy materials and large capacity requirements.

Source: Type V gyratory sifter is built by Great Western Mfg. Co., Dept. CP, Leavenworth, Kan. . . . or for more information check CP 4814 on handy form, pages 2 and 3.

Repacking under pressure featured in valves

Four-page folder describes full line of forged steel, union bonnet needle valves. Valves are for high pressure and corrosive services, and feature back-seating on the stem which permits repacking under pressure. Sizes range from 1/8 through 3/4" for working pressures to 4000 lb at 150°F. Needle valve folder is issued by Kerotest Manufacturing Company, Dept. CP, 2525 Liberty Ave., Pittsburgh 22, Pa. When inquiring specify CP 4815 on handy form, pages 2 and 3.



For liquid screening

WILLARD STORAGE BATTERY CO. USES

DUSTUBE COLLECTORS



**for controlling
lead oxide dust and fumes**

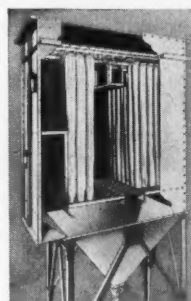
In three great plants of the Willard Storage Battery Company, Dustube Collectors are collecting lead oxide dust and fumes created by plate cutting machines, dross hoods over refining kettles and scrap conveyors used in manufacturing storage batteries.

As in plants that set the pace in every industry, the Dustubes were selected by Willard engineers for their many cost-saving features plus their high collecting efficiency. As Mr. R. J. Halsall, Works Manager of the Memphis plant writes, "The control of lead dust at its source is of prime importance in our plant, and in planning for its effective control, Willard engineers, with years of experience in this field, specified our present equipment to handle the job."

You, too, can depend on the Dustube for a dust collector that is engineered to your specific requirements. Write today for full details.

DUSTUBE ADVANTAGES

- BETTER DUST REMOVAL**—Simple, fast, thorough. Shortens cleaning time.
- POWER SAVINGS**—Lower resistance to air flow. Lower air velocities.
- HIGH EFFICIENCY**—Nearly 100% efficient by convincing tests.
- EASE OF INSPECTION**—Clean, safe, simple. No parts to remove.
- LESS FILTER WEAR**—No abrading metal contact. Easy to ship, store and handle.
- FASTER FILTER REPLACEMENT**—Takes only a few seconds. Requires no tools.



**American dustube
COLLECTORS**

OFFICES IN PRINCIPAL CITIES

AMERICAN WHEELABRATOR & EQUIPMENT CORP., 478 S. Byrkit St., Mishawaka 12, Ind.

When inquiring check CP 4816 on handy form, pgs. 2-3

puttin's a breeze ... his mind's at ease



Yes sir, here's a chap that can really concentrate on a putt! He knows that a flash fire can't stop production at his plant . . . equipment, materials, buildings, and the lives of employees are fully protected with modern, approved C-O-TWO Fire Protection Equipment.

You, too, can have this same ease of mind about your factory, mill, warehouse, power station or research center. There are fire hazardous areas that particularly need C-O-TWO fast, positive fire protection: spray booths, dip tanks, solvent baths, electrical equipment enclosures, mixing vats, storage tanks, pump rooms, record vaults, store rooms, especially anywhere there's danger of flammable liquid or electrical fires. At many locations a C-O-TWO Combination Smoke Detecting and Fire Extinguishing System is a "must". The first trace of smoke in a protected area sounds an alarm . . . then fast, clean, non-damaging, non-conducting carbon dioxide blankets the fire, putting it out in seconds, before it spreads and causes extensive damage . . . no lingering odors, no water damage with carbon dioxide.

So, whatever your fire protection problem, let an expert C-O-TWO Fire Protection Engineer help you in planning complete and up-to-date fire protection facilities now. Write us today . . . tell us about your particular fire hazards, our experience is at your disposal . . . there is no obligation of course.



C-O-TWO FIRE EQUIPMENT COMPANY

NEWARK 1 • NEW JERSEY

Sales and Service in the Principal Cities of United States and Canada

Affiliated with Pyrene Manufacturing Company

MANUFACTURERS OF APPROVED FIRE PROTECTION EQUIPMENT

Squeeze-Grip Carbon Dioxide Type Fire Extinguishers • Dry Chemical Type Fire Extinguishers
Built-In High Pressure and Low Pressure Carbon Dioxide Type Fire Extinguishing Systems
Built-In Smoke and Heat Fire Detecting Systems

When inquiring check CP 4817 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

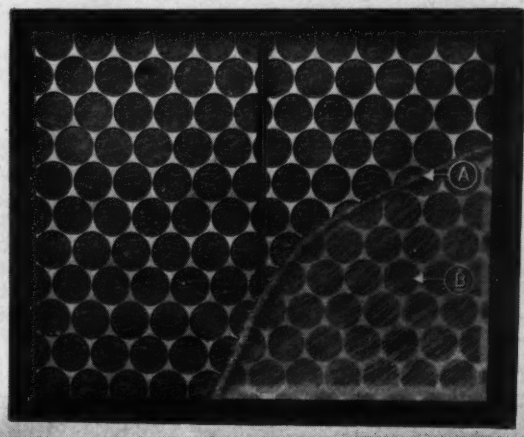
Addition of industrial mat improves performance of air filter . . .

unit consists of standard impingement pad with extra bonded industrial mat on down-stream side

Uses: Filters to eliminate dust and dirt from central heating, ventilating, and air conditioning systems.

Features: Traps 95 to 98% of all dust and dirt.

Description: Unit consists of a standard impingement filter pad to which a bonded industrial mat is added on



A — standard impingement filter pad
B — bonded industrial mat

down-stream side. Impingement and straining actions are thus combined. Unit is called "I-S Air Filter" and has been field tested for 6 months.

Source: Glasfloss. Dept. CP, 155 E. 44th St., New York, N. Y. . . . or for more information check CP 4818 on handy form, pages 2 and 3.

Oxifying process proves faster, more efficient in cleaning and purifying mercury . . .

dissolved base metals separated and precipitated as dry, non-cohesive dust, capacity 150 lb

Uses: Cleans mercury of dissolved base metals at rates up to 600 lb a day in batches of 150 lb. When used in combination with maker's Type H filter, floating impurities such as water, dust and acid residue are removed.

Features: Restores mercury to a purity meeting requirements of scientific instruments or other applications with similar high standards. Process takes less time than usual methods and cleans so effectively that residual contamination is less than one part in a million.

Description: Oxifier utilizes an electric motor to operate a set of paddles which beat the mercury, whipping it into a thick spray for several hours. As the base metal contaminants come in contact with the air, they oxidize and form a powder and precipitate as a dry, non-cohesive dust. This dust is readily removed by filtering with Type H Filter. Based on the gold adhesion principle, the filter removes everything but suspended iron and dissolved metals. Its capacity is 250 lb in 10 minutes or 40 lb per minute if head is sustained.

Unit is of welded construction throughout. Cylinder which holds mercury is lined with acid and wear-resistant "Lastiglas". The oxifier stands 21" high and requires a floor

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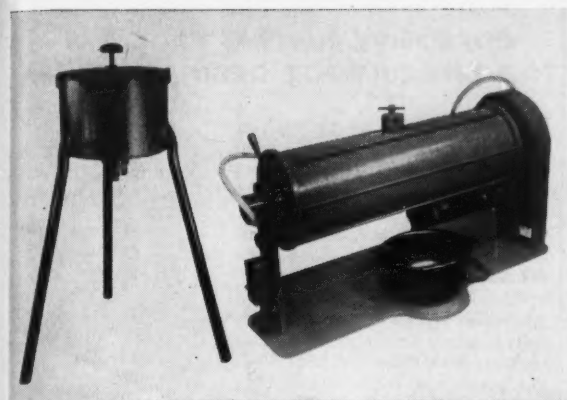
*"Substantial operations" does not necessarily mean an extremely large plant. But requests for the magazine exceed supply so we must set standards to insure publication being sent where it can be used to best advantage.

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CHEMICAL PROCESSING



Oxifier and filter for mercury cleaning

space of 21 x 36". It weighs 250 lb (shipping weight 350 lb). Motor is 1/3 hp and operates on 115 volt, 60 cycle AC supply.

Filter weighs 40 lb, (shipping weight 65 lb). It stands 31" high, and occupies a floor space of 21" square. Filter reservoir holds 250 lb of mercury. It is lined with a mercury resistant composition. Other parts contacting the mercury are made of stainless steel. Designed to fit into processing lines, reservoir has a valve for draw-off, arranged for attachment of funnels and leads.

Source: Large mercury cleaner, as well as 5 and 25 lb oxifiers are made by Bethlehem Apparatus Co., Dept. CP, Front & Depot Sts., Hellertown, Pa. . . or for more information check CP 4819 on handy form, pages 2 and 3.

**Bottom draw-off valve
latest addition to
mixer-cooker . . .**

tilting type unit retains all predecessor's features

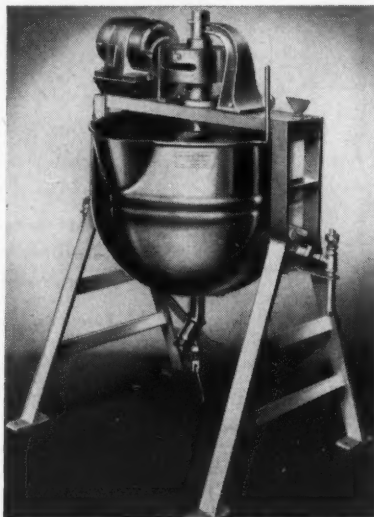
Uses: For cooking and mixing simultaneously.

Features: Kettle has all features of maker's "Tilting Mix-Cooker" plus the added feature of a large draw-off valve at the bottom. Thus, product being cooked and mixed can be drawn off either through rim lip upon tilting or through the bottom valve.

Description:

Steam jacket covers two-thirds of the kettle area. Material of construction is stainless steel. Agitators can be single or double motion types with maple or plastic scrapers. Hydraulically lifted agitator arms are available.

Source: Development of Hamilton Copper & Brass Works, Inc., Dept. CP, Hamilton, Ohio. . . or for more information check CP 4820 on handy form, pages 2 and 3.



Note draw-off valve on latest Tilting Mix-Cooker

NOT A COATING . . .
NOT AN ENAMEL . . .
NOT A GLAZE . . .

Solid Porcelain



NON-POROUS THROUGH-AND-THROUGH

The dependability and long life of the Lapp Valve is due to its sound design, and to the fact that it is made of *porcelain* . . . body, plug and packing rings. Not a coating or enamel, porcelain is a dense, homogeneous, thoroughly-vitrified ceramic, *non-porous*, through-and-through acid resisting. Not even is the corrosion-resist-

ance of this material due to a glaze. In fact the "working parts" have no glaze. The smooth operation and pressure-tight seal characteristic of Lapp Valves result from precision-tolerance machining . . . grinding and lapping of solid porcelain to a mirror-like smoothness.

Valves and other equipment of Lapp Chemical Porcelain may be the answer to your corrosion problems. Write for literature. Lapp Insulator Company, Inc., Process Equipment Division, 421 Maple St., LeRoy, N.Y.

Lapp

PROCESS EQUIPMENT

CHEMICAL PORCELAIN VALVES • PIPE • RASCHIG RINGS
PULSAFEEDER CHEMICAL PROPORTIONING PUMPS

When inquiring check CP 4821 on handy form, pgs. 2-3

HERE'S THE FULL STORY of Low Cost, High Efficiency Filtration

with **Titeflex**

Regardless of what you filter you'll find this booklet of interest. It contains full details of how Titeflex filters can reduce your filtering costs by (1) saving time and (2) saving materials. Shows entire cycle of operation graphically and lists sizes and capacities of various models. If you filter *anything* it will pay you to get this information.

TITEFLEX, INC.
509 Frelinghuysen Ave.
Newark 5, N. J.



SEND FOR YOUR
FREE COPY TODAY

When inquiring check CP 4822 on handy form, pgs. 2-3

try **Carbowax** compound PF-45... Trade-Mark a **NEW** modified polyethylene glycol

- As a sizing, lubricating, and binding agent in textile compounds
- As a binder in ceramics, chalk, crayons, sand molds, metal powder, and detergent cakes
- As a lubricant in paper and textile calendering operations

BECAUSE IT HAS:

1. Remarkable toughness and resilience
2. Flexibility and lubricity
3. Excellent adherence to most surfaces, such as glass, metal, and textile fibers

CARBOWAX compound PF-45 is available in commercial quantities as a 50 per cent aqueous solution, which facilitates application and handling.

For a sample and additional information, call or write our nearest office. Ask for a copy of the technical bulletin "CARBOWAX Compound PF-45."

"Carbowax" is a registered trade-mark of UCC.

CARBIDE AND CARBON CHEMICALS COMPANY

A Division of
Union Carbide and Carbon Corporation
UCC

30 E. 42nd St., New York 17, N.Y. Offices in Principal Cities
In Canada: Carbide and Carbon Chemicals, Limited, Toronto

When inquiring check CP 4823 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

Discs are main components of friction clutches . . .

suitable for stub or through-shaft mounting on motors, etc

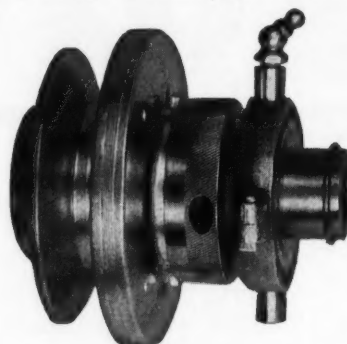
Uses: Disc-type friction clutches suitable for application to gasoline or electric motors, speed reducers, and auxiliary shafts.

Features: Clutches are designed for stub or through-shaft mounting on these items of equipment.

Description: In general, clutches are manually operated, engaging and disengaging positively with light pressure, and picking up loads without grab. Clutches lock positively in the engaged position and will not release as speed is increased.

Threaded steel adjuster provides fine control and can be clamped at any desired point. It allows settings to yield maximum pulling power with minimum engaging pressure, thus reducing friction liner wear and lowering maintenance.

Specific models are adapted for different applications. Basic model K includes integral V-belt pulley with 1 or 2 grooves. Type K-S is used with a plate-type sprocket. Type K-E comes



Friction clutch is available in four distinct types

in either of 2 units, one with a cut-off coupling for direct drives in which driving and driven shafts are in alignment, the other with an extended sleeve on which a pulley, sprocket, or gear may be mounted for through-shaft applications wherever such use is desirable.

Clutch is designed to take punishment. Shifter ring and bearings are made of bronze; other metal parts are steel or cast iron.

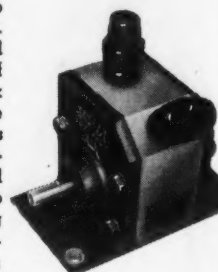
Complete details are given in maker's Bulletin K-1.

Source: The Edgemont Machine Company, Dept. CP, 2200 Home Ave., Dayton 1, Ohio, is the manufacturer . . . or for more information check CP 4824 on handy form, pages 2 and 3.

SOLVED

CORROSIVE PUMPING PROBLEMS TOO DIFFICULT FOR ORDINARY PUMPS

No stuffing boxes, no gaskets, no valves in the unique Vanton Pump. Liquid or gas never touches metal —contacts only outer surface of "FLEX-I-LINER", inner countersink surface of body block. Polyethylene body blocks and vinyl flex-i-liners are now available. Also many different combinations of rubber and plastic flex-i-liners and plastic pump body blocks to handle your pumping requirements. More and more leading plants are relying on Vanton Flex-i-liner Pumps to handle their tough, corrosive chemicals. Models from fractional to 5 G.P.M. Write for literature



SELF PRIMING
SELF LUBRICATING
NO CONTAMINATION
LOW MAINTENANCE
POSITIVE DISPLACEMENT

VANTON

NON-CORROSIVE
flex-i-liner

PUMPS

FLUID NEVER
TOUCHES METAL

VANTON PUMP CORP.

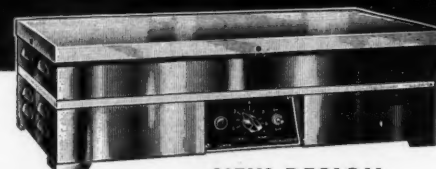
EMPIRE STATE BLDG., DEPT. P N.Y. 1, N.Y.

When inquiring check CP 4825 on handy form, pgs. 2-3

FAST-HEATING, VERSATILE

TEMCO

HOT PLATES...



NEW DESIGN...
for evaporations,
boiling and general
controlled heating

Latest engineering advances embodied in this TEMCO design lets you perform your work more efficiently, gives you extra economy of operation. Cast aluminum top plate heats to 500°F. in 30 minutes. Temperature range 140°F. to 850°F. Built-in Temcometer provides precise temperature control. Clean-cut modern stainless steel body is resistant to chemicals, easy to keep clean. Controls especially ventilated for cool operation and control panel recessed for protection against damage. Two compact sizes: 12" x 12" and 12" x 24", both 7" high. Write for bulletin H-1 and dealer's name.

THERMO ELECTRIC MANUFACTURING CO.

476 Huff St., Dubuque, Iowa.

When inquiring check CP 4826 on handy form, pgs. 2-3

CHEMICAL PROCESSING

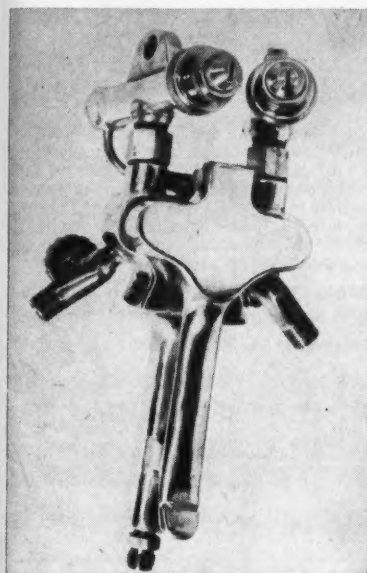
PROCESSING EQUIPMENT

Solutions mix after atomizing from twin nozzles of spray gun . . .

method keeps solutions apart until they leave gun; useful in applying polyester films

Uses: Gun sprays two solutions at the same time. Was developed to handle materials that are stable in themselves but that cure quickly only when mixed with other materials.

Features: By using two pots and a spray gun with two nozzles, the two solutions are kept from each other until they are mixed externally as they are atomized.



"Two-in-one" spray gun

Description:

Following is an example of how this two-nozzle, paint-type spray gun is used with Marco polyester resins. One-half of MR-28C resin in which Marco catalyst has been dissolved is placed in one pot, and the other half of the resin is mixed with Marco accelerator in the other pot. The resin-catalyst blend will remain stable

for at least one working day and the resin-accelerator blend for considerably longer. When spraying to form the film, the blends mix in atomized form.

In this case, comparatively large proportions of accelerator may be used, resulting in very rapid gelation—about 3 minutes or less at 70°F.

For optimum results, compressor should deliver at least 15 cfm air with minimum line pressure of 70 lb. Greater line pressure will increase amount of resin mix sprayed, with the same atomization. Line pressure should be applied directly to gun.

Marco resin formulations specially developed for use with the gun are available from gun manufacturer.

Source: Manufacturer of the Schori Model 2S spray gun is Schori Process Division, Ferro-Co Corporation, Dept. CP, 8-11 43rd Rd., Long Island City 1, N. Y. . . or for more information check CP 4827 on handy form, pages 2 and 3.

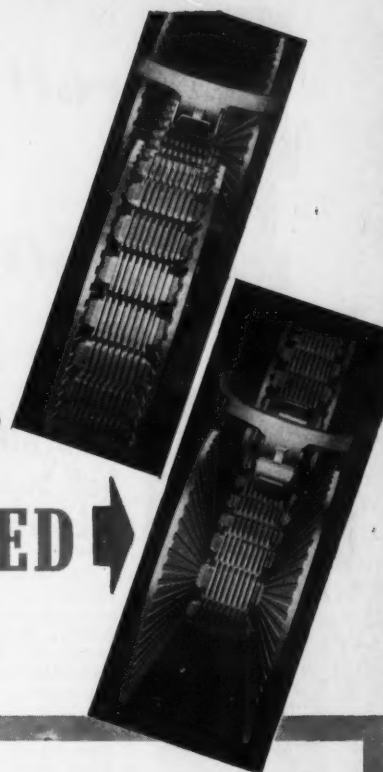
Shows insulating fire brick for steady use at 3000°F

Four-page illustrated folder presents economic advantages, industrial applications, and refractory properties of insulating fire brick. Brick is for sustained use at 3000°F. Physical and thermal characteristics are given in table form. Folder also contains summarized information on accessory materials and other insulating brick. "JM-3000 Insulating Fire Brick" is issued by Johns-Manville, Dept. CP, 22 E. 40th St., New York 16, N. Y. When inquiring specify CP 4828 on handy form, pages 2 and 3.

Only
the P.I.V. variable speed
drive has tooth-grip action . . . from

MAXIMUM SPEED →
to MINIMUM SPEED →

with an infinite number of positive settings



Only Link-Belt's P.I.V. delivers *positive*, stepless speed changing independent of friction . . . because only Link-Belt's P.I.V. has the self-tooth-forming chain that makes this possible. Your nearest Link-Belt branch office can show you how to increase the efficiency and flexibility of your machines, and supply complete information—covering pre-selection of the right P.I.V. variable speed transmission for your needs, horsepower ratings, arrangements and engineering data.

LINK-BELT
P.I.V. VARIABLE SPEED DRIVE

LINK-BELT COMPANY: Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Houston 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8, Springs (South Africa). Offices, Factory Branch Stores and Distributors in Principal Cities.

12,281

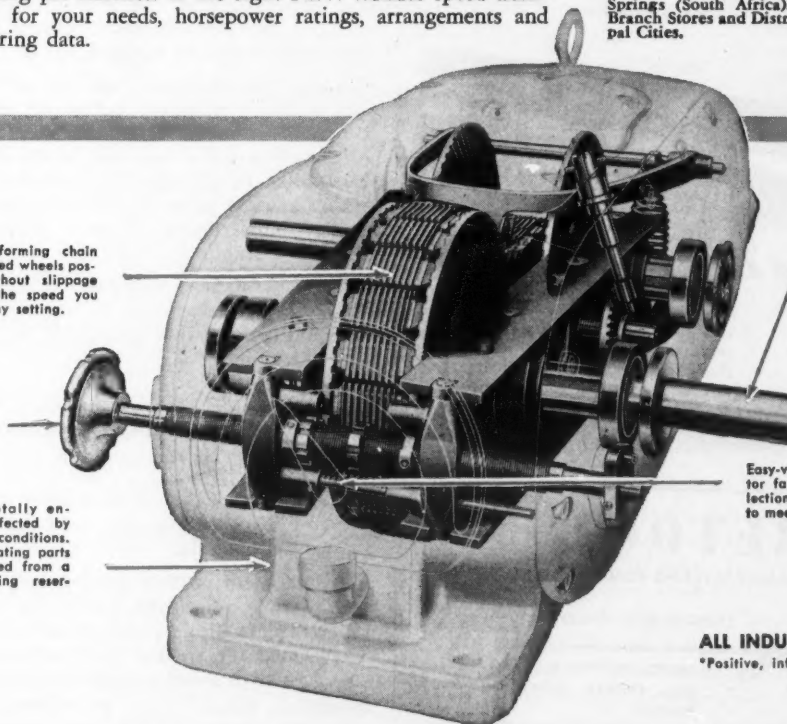
Self-tooth-forming chain grips toothed wheels positively without slippage—gives the speed you need at any setting.

An infinite number of positive, stepless speed adjustments may be made with manual, electric, pneumatic or hydraulic controls.

All-metal, totally enclosed—unaffected by atmospheric conditions. All vital operating parts splash-lubricated from a common housing reservoir.

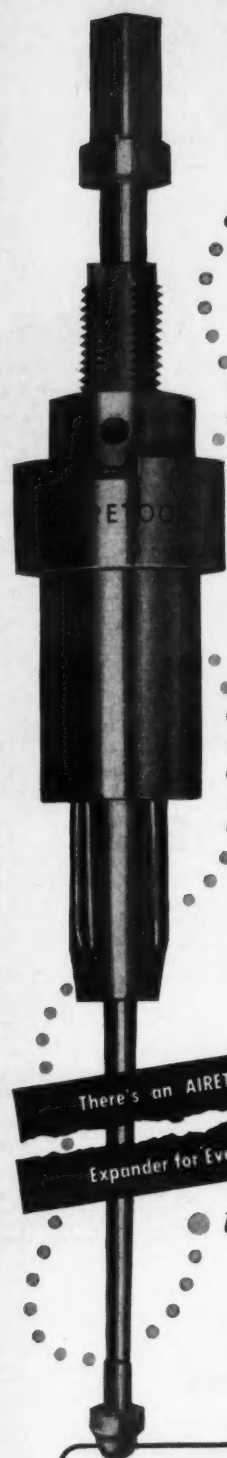
You can get minute speed changes and maintain them accurately while operating under full load.

Easy-view speed indicator facilitates speed selection and adjustments to meet all requirements.



ALL INDUSTRY USES P.I.V.*
*Positive, infinitely variable

When inquiring check CP 4829 on handy form, pgs. 2-3



**roll 'em
FAST
roll 'em
RIGHT**

**with AIRETOOL
ball-bearing
tube expanders**

The stepped-up demands of industry put production equipment at a premium. Down-time reduces production. By providing better tube maintenance, AIRETOOL tube cleaners and expanders cut down-time to the bone.

The AIRETOOL ball-bearing type expanders (illustrated) roll those small tubes in your heat transfer equipment to a "T." They are accurate, safe and easy to operate. Features include tapered, bevel-nosed rolls to produce smooth unridged surfaces, a ball-bearing thrust to minimize friction. Separate ground raceways reduce bearing breakage. Wait no longer to cash in on its many benefits.

There's an AIRETOOL Tube Cleaner and Tube

Expander for Every Type of Tubular Construction

write for help

Details on this amazing expander and other AIRETOOL tube maintenance equipment specially designed for the processing industry will be gladly furnished on request. Write The Airetool Mfg. Co., 331 S. Center Street, Springfield, Ohio.

AIRETOOL

MANUFACTURING COMPANY

SPRINGFIELD, OHIO

BRANCH OFFICES: New York, Philadelphia, Chicago, Tulsa, Baton Rouge, Houston

Representatives in Principal Cities

When inquiring check CP 4830 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

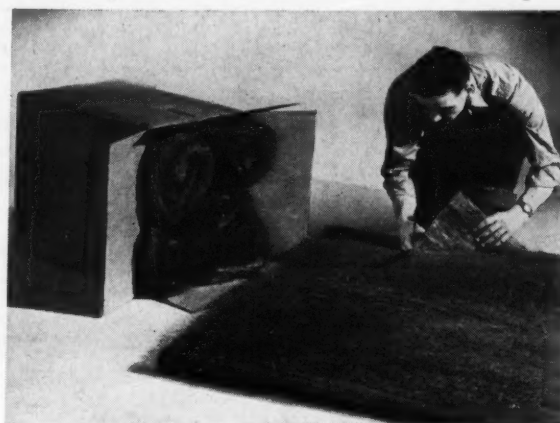
Installing air filter media without frames cuts cost, maintenance time . . .

low air resistance glass fiber material cut from roll and installed between wire screening

Uses: For installation wherever standard, disposable air filter units are used.

Features: By eliminating frame, cost is cut considerably. Maintenance costs are also reduced.

Description: Media is composed of long, fine glass fibers with low air resistance and high filtering efficiency; moisture proof and fire-resistant. It is made up in



Air filter media being cut to size from roll

standard size rolls, 40" wide and 10' long, in both 1 and 2" thicknesses. It is packed 5 rolls to a carton and provides air filter coverage of 167 sq ft. Coarse wire screening, similar to chicken wire, can be used on both input and output sides of the filter. Once installed, there is no need for replacement of this screening. Only the filter element need be replaced.

Cleaning filter elements is quickly and easily accomplished. Pack is simply rolled out, cut to size, and installed between screening. Time involved for filter element replacement is reduced over that required for the change of individual frame filters because the strips are cut to maximum lengths, so that a single strip may do the work formerly requiring multiple single units. Thus, a whole bank may be inserted in a single operation.

Source: Glasfloss Roll-Pak media is made by Glasfloss, Dept. CP, 155 East 44th St., New York, N. Y. . . . or for more information check CP 4831 on handy form, pages 2 and 3.

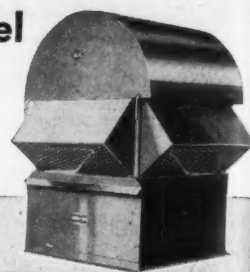
Commercial Chemical Development

(Continued from page 4)

research, through the use of industry contacts and available statistics, takes steps to determine possible consumption at various price levels.

If reports from product development and market research are favorable, pilot plant production ensues. Here, some of the manufacturing problems not encountered at the pre-pilot-plant stage are met and overcome. Chemical QED now goes to technical service for further investigation concerning its adaptability to promotion in various unrelated industries. Supervised field tests are conducted in friendly plants representing a fair cross section of potential users. At this point, market research again comes into the picture

New "PRV" model power roof ventilator



• Get positive, controlled ventilation, independent of wind or weather conditions, in buildings with vertical flues or duct systems. Non-overloading, backward curved wheel direct-driven by self-cooled motor. Air control accessories. Exceptional air deliveries. Pressures range from free air to 1½" SP. Weatherproof housing. Compact, rugged, precision-built, highly efficient. Easy to install and service. "One-Name-Plate" Guarantee. Call nearby Branch Office (consult classified directory), or send inquiry card.

ILG ELECTRIC VENTILATING CO., CHICAGO 41, ILL.
2813 N. Crawford Ave. Offices in more than 40 Principal Cities

FREE! Engineering data bulletin No. 1901



VENTILATION
for rapid air change

When inquiring check CP 4832 on handy form, pgs. 2-3

EVERY ARTICLE IN CHEMICAL PROCESSING IS "STAFF WRITTEN"

Every article in CHEMICAL PROCESSING is terse, brief, to-the-point . . . yet packed with essential facts of developments important to every man in chemical processing.

For every article is "Staff Written." Our Editors dig out the vital news-facts, then write them in the fewest possible words. That's why you read so much . . . keep up with developments . . . in short reading time. You don't have to "wade through" long, hard-to-read articles.

That's why you don't find these articles signed . . . every one is "Staff Written." It's the most difficult kind of editing, but it pays big dividends to every busy reader.



Make more Money with **ACCURATE SIZING**

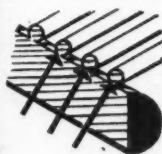
The exclusive round rod design of Bixby-Zimmer Screens keeps screen openings accurate, even with 50% wear! Your sizing operations maintain uniform precision — your processing wins greater profits. Stainless steel top and tie rods resist rust, corrosion and chemical action — stay cleaner in use. Precision spot welded construction keeps screen rigid — rods accurately spaced.

CONSTANT SCREEN OPENING

Even when the top rods wear halfway through, the screen opening stays the same. This increases the useful life of Bee-Zee Round Rod Screens . . . helps you maintain sizing accuracy longer.



NON-BLINDING ACTION . . .



Fine point of contact between round top and tie rods eliminates any "pocket" where small particles could clog. This speeds up a deliquifying operation, too — allows the screen to "suck" fluids off faster.



Write for free screen information catalog, explaining all the features of Bee-Zee Screens and their use in chemical processing work. No obligation.

BIXBY-ZIMMER
ENGINEERING COMPANY

Bee-Zee Screens can be fitted to any chemical processing equipment.
750 ABINGDON ST., GALESBURG, ILL.

When inquiring check CP 4833 on handy form, pgs. 2-3

to assay the desirability of building a plant to supply X pounds of QED.

With a favorable report on the desk, top management consults with all four prime groups to thoroughly explore every angle before deciding to proceed. As the plant comes into production, market development, technical service and sales development become increasingly important. While holding the markets originally surveyed, it is necessary to find new expanding uses for the product. Any chemical which survives under present highly competitive conditions must be sufficiently versatile in application to insure volume production with gradual reductions in price. Field service collaborates in the search for new or expanding uses while overcoming obstacles which arise when QED is used in various manufacturing processes. The field men are also responsible for the difficult task of seeing that a product which has been sold remains sold.

All of the data obtained since the new chemical left research is carefully tabulated and turned over to sales development. They prepare circulars, brochures, other types of literature, advertising copy and promotional campaigns. Now, QED becomes the prime responsibility of sales. The continued assistance of commercial development serves to acquaint manufacturing and research with the need for product improvement to maintain competitive position.

Several of the many interesting steps have been covered above, all of which are integral parts of commercial chemical development. The overall purpose of this fourth "wheel" is to act as a non-irritating connecting link or buffer for the other groups. If you can control research so that only chemicals of merit reach the consumer . . . if you can prevent the construction of manufacturing plants which are too large or woefully inadequate for your needs . . . if you can restrain the sales group sufficiently to eliminate unsound product exploitation . . . then scientific commercial development is worth its weight in gold.

Convention & Exhibit Schedule

May 24-25. Society of the Plastics Industry, Annual Meeting, Greenbrier Hotel, White Sulphur Springs, W. Va.

Sept. 3-7 American Chemical Society, Diamond Jubilee Meeting, 120th National Meeting, New York.

Sept. 10-14. Instrument Society of America, Sixth National Instrument Conference and Exhibit, Sam Houston Coliseum, Houston.

Sept. 16-19. American Institute of Chemical Engineers, Regional Meeting, French Lick Springs Hotel, French Lick, Ind.

Sept. 16-19. American Institute of Chemical Engineers, Regional Meeting, Sheraton Hotel, Rochester, N. Y.

Oct. 1-4. Industrial Packaging and Materials Handling Exposition, 6th Annual Meeting, Public Auditorium, Cleveland.

Oct. 8-10. American Oil Chemists' Society, Edgewater Beach Hotel, Chicago.

Oct. 23. Association of Consulting Chemists and Chemical Engineers, Inc., Annual Meeting, Symposium, Dinner, Shelburne Hotel, New York.

Nov. 1-3. Federation of Paint and Varnish Production Clubs, Chalfonte-Haddon Hall, Atlantic City.

Nov. 26-Dec. 1. 23rd Exposition of Chemical Industries, Grand Central Palace, New York.



If waste and inefficiency ruin thee and thy country today,
how shall thee profit by finding a horseshoe tomorrow?

—Acme Steel Notebook, 1951

The Acme Steel steel strapping and wire stitching equipment you have today means efficient and thrifty production in your packaging, shipping and materials handling operations. Protect it well.

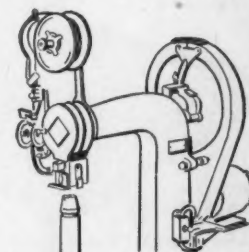
In spite of an increase in productive capacity, U.S. military requirements on some products make it impossible for Acme Steel to meet all the requirements of our more than 50,000 customers. To make the best use of Acme Steel flat strapping, stitching wire and other products available to you, let our representative put Acme Steel's experience and ingenuity to work for you.

In the past 71 years, we have helped our customers weather many a difficult period. We are ready and willing now to help you keep your tools on the job or develop new setups that will increase efficiency in your operations and minimize waste.

Information for ready reference on Acme Steel products is available upon request.

ACME STEEL COMPANY

Dept. CP-51, 2838 Archer Avenue, Chicago 8, Illinois
We have 46 service offices in the United States and Canada. If not listed in your telephone directory, write us.



Five things you can do to
keep your Acme stitching
machines on the Job!

1. Clean and oil every day.
2. Never operate stitcher without material in stitching position.
3. For perfect stitching, check work regularly. If in doubt about any operating difficulty, refer to service manual (additional copies sent upon request) or submit stitched material, identified by machine type and serial number, to Customer Service Department, Acme Steel Company.
4. From time to time moving parts need replacement—keep a supply on hand to make quick, minor replacements.
5. Ask us about the Acme Steel "3-WAY SERVICE PLAN" for equipment repairs.

**ACME
STEEL**

In 1950 Acme Steel had 9135 stockholders—a growth of 21.1% over 1949. They comprised 3223 men, 3089 women, 2260 joint accounts, 563 trusts, corporations and institutions. 646, or 15.9%, of our employees are stockholders.

ACME STEELSTRAP flat steel strapping and ACME UNIT-LOAD carload bracing BAND, SEALS and TOOLS • ACME SILVER-STITCHERS and ACME SILVERSTITCH WIRE for box stitching • ACME-MORRISON METAL STITCHERS and BOOK STITCHERS • ACME-CHAMPION BAG STITCHERS • ACME HOT AND COLD ROLLED STRIP STEEL • ACME GALVA-BOND steel slot stock for Venetian blinds • ACME STEEL SPECIALTIES, including hoops, corrugated fasteners, barbed box straps, nail-on strapping and other container reinforcements • ACME STEEL ACCESSORIES—snips, tool mounts, reel stands, coil holders, coil trays.

When inquiring check CP 4834 on handy form, pgs. 2-3

Ready power for your hand pipe tools with **RIGID**



One man can
handle this
RIGID "400"
Portable Power
Drive

Legs, handy tool tray and fittings
at slight extra cost.

● Cut and thread more pipe faster, more easily with efficient No. 400. Lightest power unit made—one man can move it around on the job. Universal motor—forward, reverse, light socket power. **RIGID** 3-jaw chuck, with chuck wrench ejector; self-centering workholder in rear turns with pipe. Sealed-in lubrication. Plenty of power, pays for itself in time and work saved in hand tool threading, cutting, reaming. Ask for the **RIGID "400"** Power Drive at your Supply House.

RIGID

Work-Saver Pipe Tools

THE RIGID TOOL CO. • CLEVELAND, OHIO

When inquiring check CP 4835 on handy form, pgs. 2-3

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PROCESSES, EQUIPMENT and MATERIALS

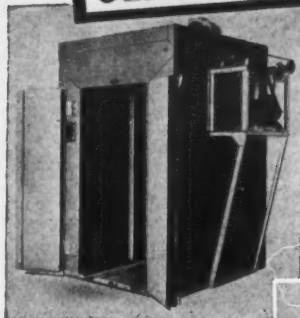
Use this "quick-locator" when you want information on a specific type of process, equipment or material mentioned in the processing stories or the advertisements in this magazine. Everything discussed in this issue is given here, if you want more data you can write manufacturer direct... or turn to pages 2 and 3 and use the handy "Information Request Slip." This is a special service provided by the publisher... no obligation or charge, of course. The publisher contacts the proper manufacturers for you—information comes to you direct.

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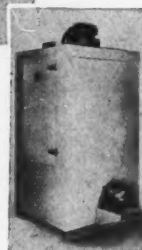
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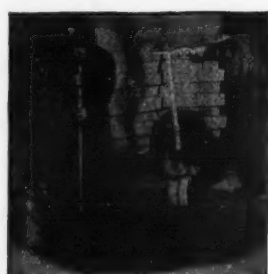
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"That's Interesting"

Harder surface finish attained for metallic magnesium

Metallic magnesium as a structural metal has gained wide acceptance, but the holder of a current patent states that use for some purposes is restricted by a tendency to tarnish on exposure to humid atmospheres and its resistance to abrasion. Now, a protective coating is said to offer advantages not heretofore attained. These are achieved by anodically electrolyzing the metal in a water solution of about 24% alkaline borate and 16% sodium metasilicate. Without the latter, surface finish is not as hard as that obtainable with it. Addition of about 0.1% phenol is also recommended to give improved uniformity and density in the coating. (Silicate P's & Q's — Philadelphia Quartz Co., Philadelphia 6, Pa.)

Permanent porcelain marking ink

Using glycerine instead of raw linseed oil, M. W. Greene (Chemist Analyst; 39, 90, Dec. 1950) has improved properties of Isbell's permanent marking ink for porcelain ware. In the improved process, 1 gram of potassium carbonate, 1 gram of borax, 2 grams of litharge, and 2 grams of cobalt nitrate crystals (dried at 100°C for one hour) are ground together to form a fine powder. To this, 5 or 6 drops of glycerine are added, dropwise, until the product is of a suitable consistency to flow from a pen. Using this ink, the desired markings are written lightly on the ceramic ware, which is then heated to redness for a minute or two over an oxidizing flame. On cooling, this gives a permanent blue mark on the porcelain surface. (Glycerine Facts — Glycerine Information Service, New York 17, N. Y.)

Single mold plastic life raft can hold 60 men

Expanded Royalite is the name of a plastic just announced by the United States Rubber Company that is particularly suited for making life rafts, life ring buoys, and other flotation equipment. It is strong, not affected by sun or salt water, and will stay afloat indefinitely. Life rafts of the material can be molded in one piece. Some are large enough to support sixty men. The plastic is a good thermal insulator. Its most important application in this field has been among those that require insulating material for structural strength. Because it has little or no moisture absorption, its thermal insulating properties remain excellent for years.

Royalite is also said to have unusual dielectric properties. Made in flat sheets, it is easily formed by conventional thermoplastic forming techniques; or it can be molded to shape. Density can be varied from 5 to 35 lb per cu ft.

Sulfas, antibiotics take slice of prescription dollar

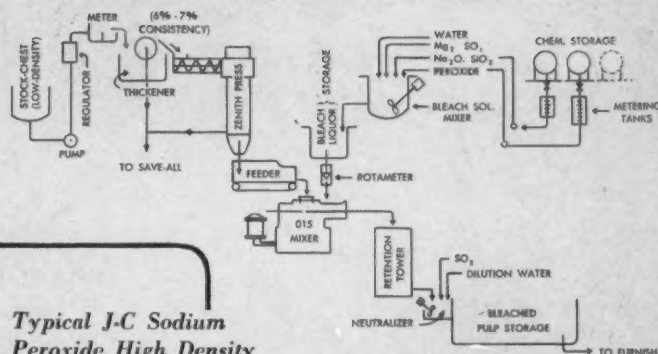
Drugs, products of research, but unobtainable a dozen years ago, account for at least \$1.50 out of each \$4 Americans currently spend for prescriptions. Estimates place sulfas currently at 12% and antibiotics at 25% of retail cost of Americans' prescriptions. (The Chemical Digest—Foster D. Snell, Inc., Brooklyn, N. Y.)

Wider use of ultrasonic energy indicated by developments

Development of a ceramic material which gives off high frequency, high intensity sound waves when excited electrically opens the way for the use of ultrasonic energy in many industrial processes. Such use has long been limited by a lack of necessary power. Typical of instances where ultrasonic energy offers advantages is in preparation of emulsions of liquids or liquids and solids to prevent settling and separation. For example, irradiation of paint deters pigment or coloring matter from settling out from the oil vehicle.

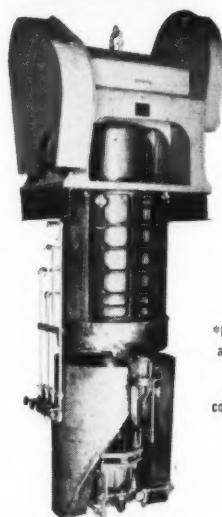
While this recently developed generator (made possible by the ceramic material) is only a two kilowatt model, it demonstrates that units of almost unlimited size can be constructed. This new ultrasonic technique was the result of research by Brush Development Co., 3405 Perkin Ave., Cleveland, Ohio. (Summarized from report of American Institute of Chemical Engineers, Columbus, Ohio.)

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